

JANUARY, 1943

ANNUAL REVIEW ISSUE

# Rock Products

*Greetings  
for 1943*

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F. L. SMIDTH & CO.

60 EAST 42ND STREET

ENGINEERS

NEW YORK, N. Y.

# Research—Accurate Controls —Rigid Inspection—Produce

## Super-Molybchrome

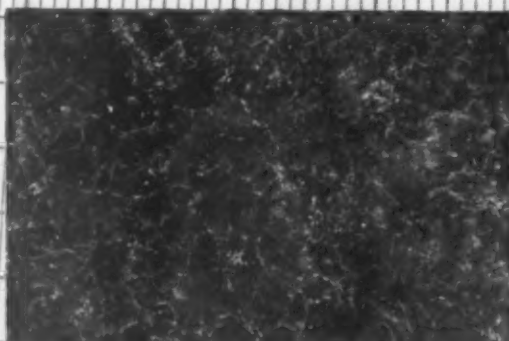


Fig. 1—100 Diameters magnification showing uniformity of grain structure.

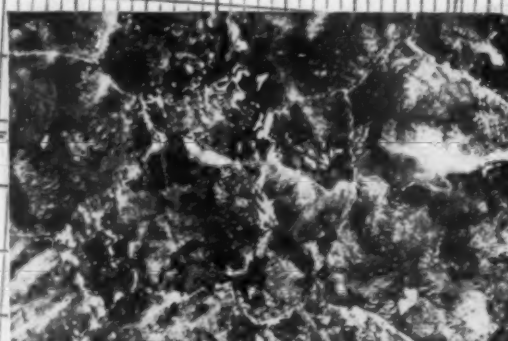


Fig. 2—500 Diameters magnification showing fine grain obtained by Eimco controlled method.

*Super-Molybchrome* steel for Liners used in Tube Mills is not just another alloy steel. Careful investigation by Eimco field engineers revealed that the process of grinding pulps called for a grade of liner steel that would combine two physical characteristics—resistance to abrasion toughness against impact.



Above—Eimco Research Lab where experienced men continue the experiments that have already given us a superior metal structure. Below—Eimco Engineering Department has developed liners for practically every type and size of mill in use today.

After months of experimental research our foundry came forward with *Super-Molybchrome*.

*Super-Molybchrome* is just what the name implies—an alloy steel containing proportions of molybdenum, chromium and carbon so balanced as to produce a steel SUPERIOR in resistance to abrasion and toughness to impact.

The production of liners made from this special steel, however, involve much more than just carefully controlled electric furnace metallurgy. Graphic control records in heat-treatment, quenching and testing are absolutely essential in the manufacture of *Super-Molybchrome*—in this field also exhaustive investigation and grain-structure photography played an important part.

Today, *Super-Molybchrome* Steel Liners are used in all parts of the world—wherever long life and cost per ton of ore or pulp ground is important operators will specify trade-marked "*Super-Molybchrome* Steel."

Eimco is proud of the job this product is doing to help win the war by keeping Ball, Rod and Tube Mills rolling with fewer shutdowns, greater production, and lower operating costs.

## THE EIMCO CORPORATION

SALT LAKE CITY, UTAH, U.S.A.

NEW YORK  
120 Broadway

CHICAGO  
111 W. Washington St.

EL PASO  
Mills Bldg.

SACRAMENTO  
1217 7th St.

# HOW TO MAKE CHAIN DRIVES RUN BETTER -- -- LAST LONGER

**1** Keep shafts exactly parallel, and wheels exactly in line. Misalignment causes uneven loading and unnecessary wear.

**2** Remove chain frequently and clean thoroughly in some solution to wash out harmful dirt and grit. Then immerse in oil.

**3** Protect chain and wheels from needless exposure to abrasive materials, dust and dampness. Use oil-tight casings with high-speed silent or roller chain drives.

**4** Inspect shaft bearings by removing grease from bearing ends to expose the actual bearing metal. Rebabbitt if needed.

**5** Flush ball or roller bearings periodically with fresh grease to drive out foreign matter and replenish the seals. In dusty atmosphere or dirty locations, use auxiliary dust seals.

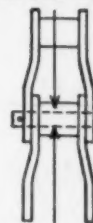
**6** Check machinery supports for vibration and reinforce if necessary.

**7** Operate chain with a little more slack than normal for a flat belt. Tight drives wear chain and sprockets needlessly.

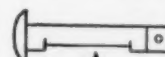
## 8 WHAT TO DO FOR WORN CHAIN

Turning a chain over so that the opposite side contacts the sprockets is a quick and easy means of restoring the original backing dimensions on cast pintle chains. On roller chains of either cast or steel fabricated types, this same simple operation will bring practically new surfaces into play under the rollers. In designs where pins are locked against rotation, wear is confined to that side against which the next link is held under tension. Rotating these pins 180°, places articulation action upon a practically unused pin area and, as far as the pins are concerned, restores original pitch. Bushed type chains afford another opportunity for pitch correction by reversing the bushings or rotating them 180°, but this involves the dismantling and reassembly of heavy press fits and should be avoided except as a last resort.

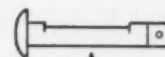
No Wear on  
This Side of Pin



All Wear Is on  
This Side of Pin

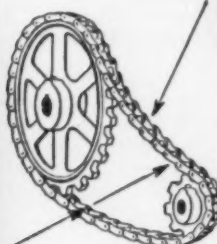


Pins Wear on One  
Side Only, Like This



Turn Pins Half-Way  
Around to Place Wear  
on Unused Surface

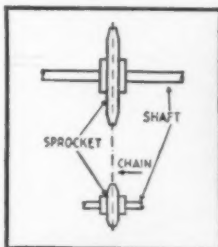
Chain Gets No Wear  
from the Outside



All Sprocket Wear Is  
on Inside of Chain

## 9 WHAT TO DO FOR WORN SPROCKETS

Cast-tooth sprockets, particularly in the larger diameters, frequently can be reversed on the shaft to bring chain barrels, or rollers, into contact with unworn root-diameter surfaces, but worn root-diameters on all types may be built up by welding and grinding smooth to fit the chain. Should wear have deformed the teeth of cast-tooth wheels into a hook-shape, these hooks may be ground off, or the wheels reversed.



## LINK-BELT COMPANY

Chicago, Philadelphia, Indianapolis, Atlanta, Dallas, San Francisco, Toronto  
Offices, warehouses and distributors in principal cities



# LINK-BELT CHAINS AND SPROCKETS

For Conveying and Mechanical Power Transmission



Member AUDIT BUREAU OF CIRCULATIONS  
Member ASSOCIATED BUSINESS PAPERS

# Rock Products

Volume 46 • January, 1943 • Number 1

PUBLISHED MONTHLY BY TRADEPRESS PUBLISHING CORPORATION

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300 WEST JACKSON BOULEVARD, CHICAGO, ILL., U. S. A.

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Subscription Price: United States and Possessions, Mexico, Cuba, Canada, \$2.00; and \$4.00 to foreign countries. Twenty-five cents for single copies. Indexed in the Industrial Arts Index.

Canadian subscriptions and remittances may be sent in Canadian funds to ROCK PRODUCTS, P. O. Box 100, Terminal "A," Toronto, Canada.

To Subscribers—Date on envelope indicates issue with which your subscription expires. In writing to have address changed, give old as well as new address.

PUBLISHED MONTHLY AT  
CHICAGO, ILL., U. S. A.

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*For continuous,  
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**F**OR a good many years we have talked about how Jones speed reducers, gears and other transmission products have been built for long trouble-free service. Some people might have said that we placed too much emphasis on ruggedness, stamina and the ability of our products to "stand up and take it".

But today in every phase of war work, industry

is calling for products that will measure up to these standards by continuously staying on the job.

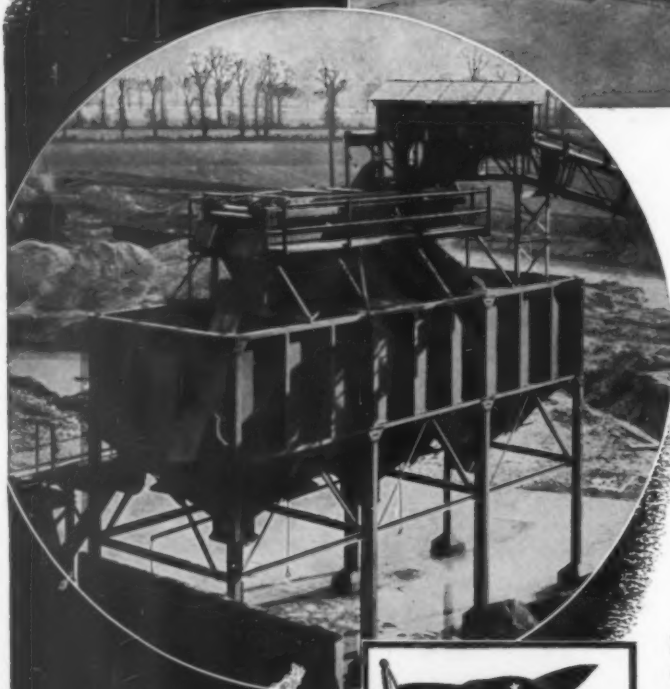
Our Bulletin No. 80 "Jones Drives for Industry" will give you a complete outline of the range of Jones speed reducers, gears and other transmission products that are built to stand the 24-hour a day drive for victory. We shall be glad to mail you a copy.

**W. A. JONES FOUNDRY & MACHINE CO., 4447 Roosevelt Road, Chicago, Illinois**

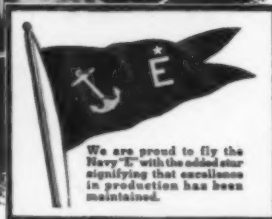
**Jones**

# For Greater Capacity and More Accurate Sizing

Four 4' x 10' Double  
Deck Symons Screens  
in a stone plant.



One of two Symons  
Screens serving this  
gravel operation.



In hundreds of installations involving the screening of many different kinds of materials, **HORIZONTAL Symons Screens** are demonstrating their enormous capacity and accurately graded sizes. They are to be found in the larger stationary plants and also in many portable plants supplied by one of the prominent builders of this class of equipment in this country.

The unusual action of the Symons Screen quickly stratifies the material bed and readily releases the fines from the oversize. Since Symons Screens size more accurately, materials produced by them are of premium quality and meet the most rigid specifications.

If you are confronted with the problem of greater output and better screening, investigate the advantages of Symons Screens.

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## SYMONS SCREENS

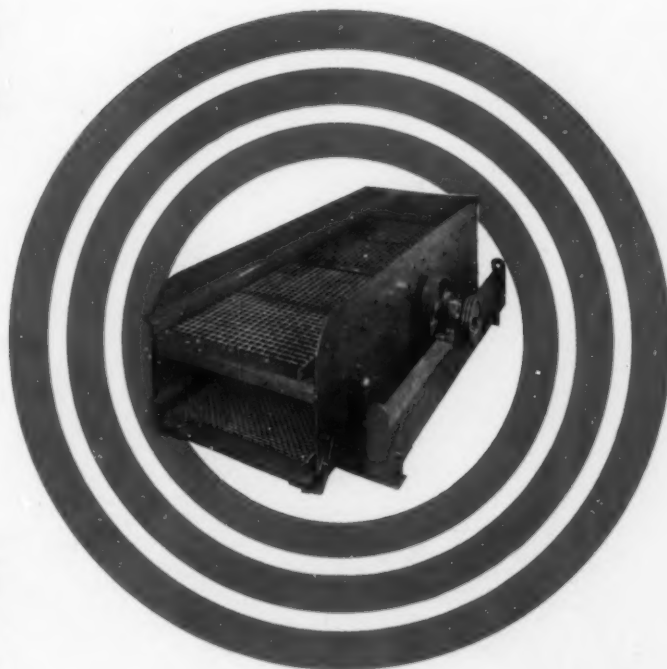
# CONTROLLED VIBRATIONS

WITH  
**TRUE  
CIRCULAR  
MOTION**

IS BUILT INTO ALL

## SECO

VIBRATING SCREENS



The patented SECO Screen Cloth Vibrator has helped a great many producers keep their fine screens turning out damp, sticky material and maintain continuous operation in wet weather. Maybe it could help you.



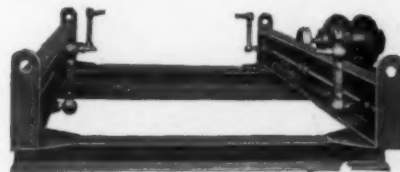
Completely descriptive SECO  
catalog is yours for the asking

### "EVERYTHING'S UNDER CONTROL"

on the "Sizing Front" for operators who process aggregates through a SECO Screen.

The SECO patented control feature eliminates the necessity of resilient supports which dampen the action of a gyrating body. The resultant SHARPER action of the SECO goes a long way toward the elimination of blinding—which naturally improves actual sizing and capacity.

Furthermore—the controlled motion of SECO gives an excellent conveying action so that if desired the screen will operate at less slope than most inclined screens. A SECO will do close sizing.



SECO Equalizer Assembly connects body and base frame. This is for connecting purposes only—no power goes into it. This controls the true circle throw motion set up by the eccentric shaft and makes sure that all points on screening surface—from back to front—operate in exactly the same plane. There are no "dead" areas.

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9 LAFAYETTE AVE. BUFFALO, N. Y.

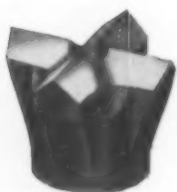
JANUARY, 1943

# A TIMKEN BIT FOR PRACTICALLY EVERY KIND OF ROCK

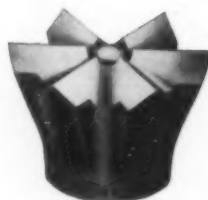
Faster drilling  
with less manpower are  
reasons why you should  
adopt Timken Bits now. These  
advantages plus lower costs  
make three reasons for their  
continued use after  
Victory.

Introduced eleven years ago, the Timken Rock Bit of today bears a remarkably close resemblance to those on the market in 1932. Improvements have been made—streamlined then, it's more streamlined now, heavy wing sections have become heavier—but basically it's the same design. Eleven years' experience has confirmed its correctness.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO



The H series; a general purpose bit recommended for hand held hammers.



The R series bit used in soft formations such as limestone, and sandstone.



The D series bit is recommended for use with wagon drills for deep hole drilling.



The F series bit, a heavy duty type used in mining to achieve fast drilling by virtue of its small gauge.



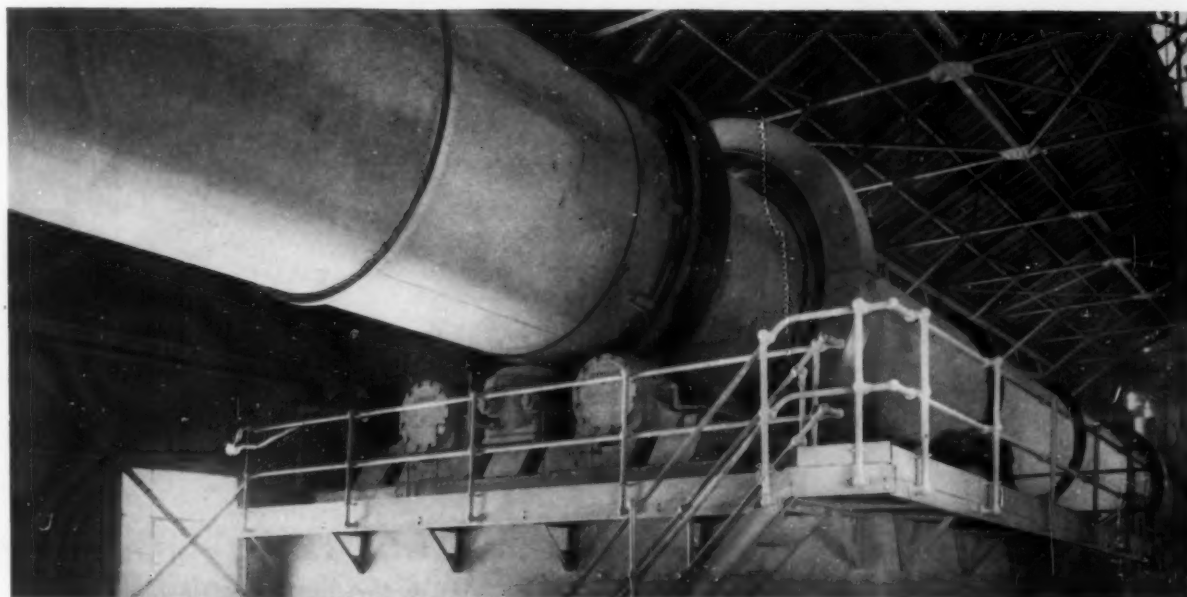
The M series, a general purpose bit, largely used in mining with mounted machines.

## TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

### ROCK BITS

# Leadership has obligations



## WE BUILD

Rotary Kilns  
Rotary Coolers  
Rotary Dryers  
Rotary Slakers  
Scrubbers  
Evaporators  
Jaw Crushers  
Gyratory Crushers  
Reduction Crushers  
Crushing Rolls  
Compartment Mills  
Ball Mills  
Rod Mills  
Tube Mills  
Pug Mills  
Wash Mills  
Feeders  
Rotary Screens  
Elevators

**L**EADERSHIP is a distinction not to be gained by mere claiming, but one that is possible of attainment only by earnest and continued endeavor. Recognition of leadership is most satisfying but it also entails heavy responsibility and therefore there can be no resting upon the oars. In fact, more intensive effort than ever is necessary, because more is demanded of a leader.

Traylor has fairly earned recognition of leadership in the manufacture of Rotary Kilns, Coolers and Dryers by (1) close and constant study of processes, in order to recognize, and in many cases, anticipate the requirements of operators; (2) by pioneering design to achieve high effi-

ciency and economy; (3) by improved and original methods of manufacture to produce the finest equipment humanly possible.

Original success came to Traylor in Cement and Lime manufacture, but later the Chemical and other process industries claimed a share of our production, so that today our equipment is widely preferred, as more and more engineers have learned of its efficiency. At this time our Kilns, Coolers and Dryers are not procurable except with highest priority ratings, but our engineers still have some little time available for consultation in planning to meet post-war conditions. Write us!

**SEE OUR BULLETIN No. 115**

# TRAYLOR

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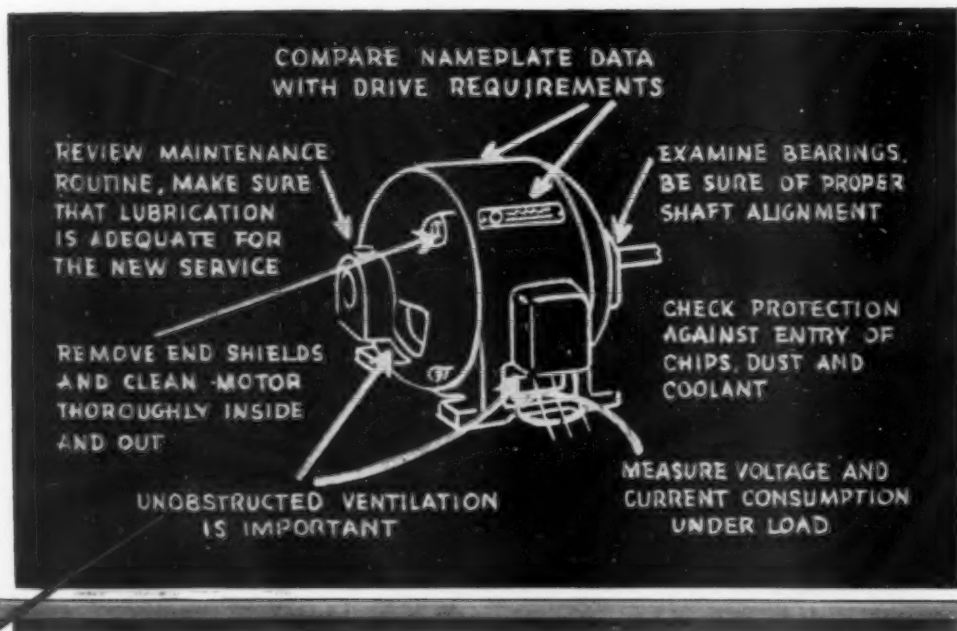
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JANUARY, 1943

# it's time to be a crank about



## protect your production with this maintenance plan

*Planned* motor maintenance, keyed to today's loads and conditions, saves vital hours of production time by forestalling future breakdowns and delay. In replacing hit-or-miss motor servicing with a regular schedule of trouble-*prevention*, you'll find real help in "How to Care for Motors."

The check list (right) tells what to do. This book tells how to do it, using well-proved methods that save time and help assure long-lasting motor service.

And, of course, your local G-E Motor Representative is always ready to aid you in putting these suggestions into practice, or in getting the new motors you may need for essential wartime jobs.



### HOW TO CARE FOR MOTORS

Every supervisor or maintenance man will find this book of value; it tells what to do to get the most out of motors, old or new. If you're setting up a maintenance program, or if you're "switching" motors from one job to another, or equipping machines with new motors, you'll find this booklet of helpful facts will save you time. Write for a copy.

General Electric, Sec. B750-154  
Schenectady, N. Y.

Yes, send me a copy of "How to Care for Motors,"  
GEA-2856A.

Name.....

Title.....

Company.....

Address.....

City..... State.....

# MOTOR CARE



## HERE'S WHAT TO DO!

1. Make sure that motors are selected to *match the job*. Install motors so they are properly aligned with the driven load and are easily accessible for regular inspection.

See "How to Care for Motors"

2. Keep motors free from dust and dirt. Establish a definite cleaning schedule.

See "How to Care for Motors"

3. Be sure that lubrication is frequent enough to take care of increased production. See that employees are instructed as to proper methods. Also guard against over-lubrication.

See "How to Care for Motors"

4. A general overhauling of hard-worked motors will add years to their life. If your motors haven't had an overhaul in the last year, try to arrange your production schedule to permit one as soon as possible.

See "How to Care for Motors"

If you need new motors for important war work, check with your G-E Motor Representative on how to get Tri-Clad motors quickly.



The Navy "E", for Excellence, has been awarded to 92,780 General Electric employees in six plants manufacturing naval equipment.



BUILDER OF

**TRI-CLAD MOTORS**

**GENERAL  ELECTRIC**



WHAT ABOUT DRIVE  
AND IDLER ROLLERS? ...

REPAIRS TO DRUMS  
AND BEARINGS ...

BUILDING  
UP TREAD  
TEETH ...

HOW TO RESHAPE  
TREAD PINHOLES ...



THEW-  
LORAIN

Emergency  
FIX-IT  
Handbook



24

PAGES of

How to Keep 'Em On-the-Job

IDEAS

**H**ERE'S a brand new handbook for all Lorain owners and operators, full of practical ideas on how to make quick, emergency repairs that will keep your machine going. It will tell you how to temporarily substitute for critical, hard-to-get parts and materials—how to do more with what you've got.

Many of the suggestions are temporary expedients only, but they will keep your machine on the job—they will help to salvage and conserve worn parts, and will save you time and money, too. Write for your free copy of the Fix-It Handbook now or clip and mail the pledge form below if you want both the Handbook and a Conservation Emblem.

HOW TO GET THIS CONSERVATION EMBLEM

If you want to show others that you are helping to make your equipment last longer, sign and mail the pledge form below. Regardless of the type or make of your equipment, we will send you a colorful red, white and blue emblem (actual size 5" diameter).

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CONSTRUCTION  
EQUIPMENT  
CONSERVATION

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CRANES • SHOVELS  
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**THE THEW SHOVEL COMPANY, Lorain, Ohio**

I hereby pledge that I shall do all in my power to prolong the life of any construction equipment in my ownership or care regardless of type or make.

I realize that it is my responsibility to avoid time-consuming delays caused by mechanical breakdowns and will see that frequent inspections are made and that necessary adjustments and repairs are promptly taken care of.

I will avoid waste of parts and materials and will eliminate any abuse of my equipment due to non-recommended operation.

Signed \_\_\_\_\_

Street Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

FIX-IT Handbook Wanted..... Lorain Model No..... Serial No.....

THESE THREE SABOTEURS

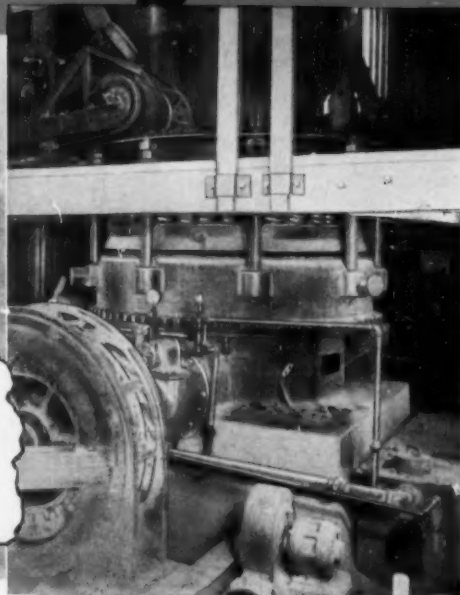
*failed!*

"We are sending you under separate cover, one eight pound hammer head and two picks which passed through our Secondary Crusher on Sept. 18, 1942, without apparently doing any damage.

This is such a remarkable demonstration of the power and efficiency of your 48" TELSMITH Gyrasphere Secondary Crusher, that we feel you should have these specimens as proof of the statement. This machine at the time was set for one-half inch discharge, which makes the demonstration more remarkable.

We get a large percentage of tramp iron  
\* \* \* In the past this was a source of grave trouble but since installing your machine tramp iron doesn't bother us."

© NAME ON REQUEST



# they didn't even stop this

## TELSMITH

### Gyrasphere SECONDARY CRUSHER

A silent, skulking saboteur—Tramp Iron constantly menaces your production. Get the insurance against shut-downs of TelSmith's *spring relief*. The crusher's concave bowl is backed by heavy springs, adjustable as to compression. When tramp iron gets in, it causes undue pressure in the crushing bowl. The springs let the concave

bowl *tilt* at the point of stress. The pressure is relieved. The concave resumes its normal position. Crushing goes on as usual. The same relief is afforded when crusher bowl is packed by fines. This means a greatly increased capacity in fine crushing, continuous operation and minimum upkeep. For the whole story, get Bulletin Y-11.

Y-3

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# *FOR OUR ARMED FORCES*

*INDUSTRIAL AMERICA HAS PLEDGED*

*ALL-OUT AND EVER-INCREASING PRODUCTION*

*FOR OUR ARMED FORCES*

*—THAT THEY MAY QUICKEN THE DAY OF VICTORY*

*—THAT THEY MAY RETURN IN SAFETY*

*—AND THAT THE WORLD MAY BE ASSURED*

*OF A LASTING PEACE*



6-DH-691 Buda Diesel powers this dragline, feeding the crusher at the Vanaken Sand & Gravel Company plant near Portland, Ore.



## with **BUDA** Diesel Power!

**T**HRIFTY, reliable BUDA Diesel power is a steady helper to the man who must get the most out of precious labor, equipment and time today. And, because long trouble-free life is designed and built into every part, these rugged engines will be contributing their cost-cutting performance to the competitive peacetime days ahead.

Those who can't afford to waste time or fuel—who want to invest in power that lasts—

are turning to BUDA. Hundreds of BUDA Diesels are now at work on:

Shovels

Crushers

Carry Scrapers

Trucks

Washing Plants

Draglines

Locomotives

Conveyors

Generators

Pumps

Drills

Compressors

Write for complete information on the BUDA line of Diesel, gasoline, natural gas and butane engines—from 20 to 250 hp.

## THE BUDA COMPANY

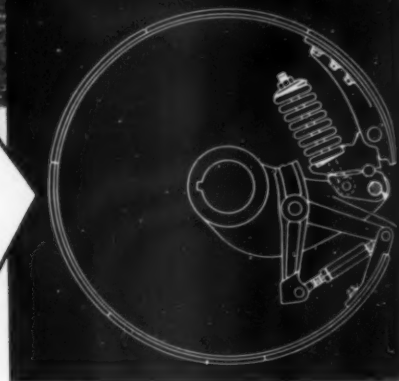
HARVEY (Chicago Suburb) ILLINOIS

GASOLINE and DIESEL ENGINES—15 to 250 H. P.





**Here's a NORTHWEST  
FEATURE that  
reduces future "DOWN TIME"**



**T**HE Northwest Cushion Clutch is unusual in shovel design. It reduces the overloads on drum shafts and associated parts by a large percentage. It lengthens hoist rope life and helps to make ample power safe. It results in reduced frequency of clutch adjustments and gives the operator ample time to throw out the main clutch when striking immovable obstructions without stalling the engine.

The Cushion Clutch is instantaneous in action and entirely automatic. It is simple in design and operation and it has been proved in years of service in the toughest kind of rock work.

Here is another of the many Northwest features that will reduce maintenance costs when you can buy Northwest again. *Buy War Bonds and plan for the future.*

**NORTHWEST ENGINEERING COMPANY**

1820 Steger Building

28 East Jackson Boulevard

Chicago, Illinois

**FOR VICTORY**



**BUY  
UNITED  
STATES  
SAVINGS  
BONDS  
AND STAMPS**

IS SAFE AT YOUR POST OFFICE OR BANK

**After Buy  
NORTHWEST**

**NORTHWEST**

*Maintenance  
starts with  
the Shot*

★ ★ ★ ★ ★ ★ ★ ★  
**AMERICAN**  
CYANAMID & CHEMICAL CORPORATION  
★ ★ ★ ★ ★ ★ ★ ★

**EXPLOSIVES**

**Correct blasting will  
minimize maintenance**  
*right down the line*

**B**REAKING rock or other material down to the right sizes—avoiding big lumps as well as fines—is the result of correct blasting practice. It means minimizing wear and tear on steam shovels, trucks, cars, hoists and crushers. It helps every piece of equipment work at its best, with the least maintenance cost.

AMERICAN Explosives and Blasting Supplies are made under exacting specifications in well equipped plants. Chemical control and thorough inspection insure adherence in manufacture to the methods and processes developed by our research.

Today, as never before, efficient blasting is all-important. Capable technical service men are available to assist you with your blasting problems.

- **HIGH EXPLOSIVES**
- **PERMISSIBLES**
- **BLASTING POWDER**
- **BLASTING ACCESSORIES**

**American Cyanamid & Chemical Corporation**



A Unit of American Cyanamid Company

30 ROCKEFELLER PLAZA • NEW YORK, N. Y.

**EXPLOSIVES DEPARTMENT**

**SALES OFFICES:** Pittsburgh, Pa. Bluefield, West Va. Scranton, Pa. St. Louis, Mo. Chicago, Ill.  
Pottsville, Pa. Hazleton, Pa. Maynard, Mass.



AMERICAN portable crushing plant reducing "hog-size" stone to  $\frac{3}{4}$ " aggregate in one reduction at the rate of 300 tons per day.

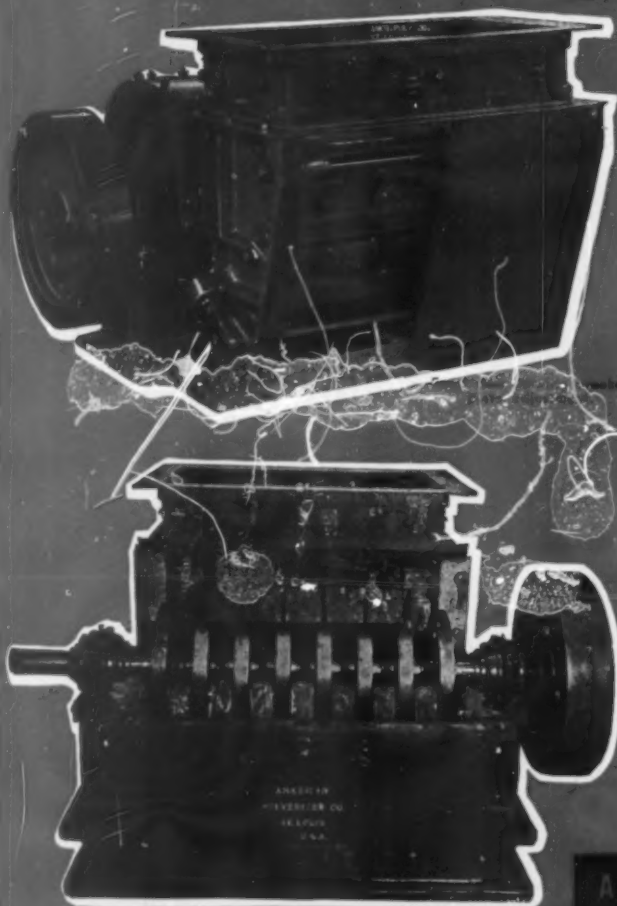
## Make Every Crushing Operation a Straight Shot At the Enemy

By installing an American Crusher in your plant now you will prepare it for the increased demands for our War Effort, and will assure yourself of consistent production of a uniform product for utmost profit.

Speed and meeting exact specifications are the main requirements in filling the present emergency needs—American Crushers, with advanced engineering, excel in these two features—turning out high quality products day after day with the lowest possible operating costs.

Only carefully selected and tested parts are used in every American Crusher to insure trouble-free service. More than 30 years of experience in building Crushers assure you of getting a superior machine into which is built such outstanding features as Heavy Cast Construction, Cast Steel Adjustable Platen, Cast Steel Discs, Heavy Alloys Steel Shaft, SKF Spherical Roller Bearings and Manganese Lined Crushing Chamber.

Let us show you how an American Crusher will enable you to meet the 1943 requirements at capacities to fill the large orders.



AMERICAN PULVERIZER CO.  
1241 BUCKINGHAM AVE. ST. LOUIS, MO.





# ★ ★ ★ ROCK PRODUCTS ★ ★ ★

MUST  
POINTERS  
FOR EVERY  
OPERATOR

**NEWS  
FLASHES**

COMMENTS  
BRIEFS &  
INDUSTRY  
HIGHLIGHTS

## GONE, BUT NOT FORGOTTEN!

Washington, D.C.: Leon Henderson, head of O.P.A. will be missed on account of his 4-ft. long questionnaires and his eight fat volumes of price regulations, which probably no one person in the world has ever read entirely. But he had "guts" and did the best he could in an impossible job. He knew as well as anyone that the first step in freezing prices was freezing wages. But that was not to be. He was a good college professor of economics with no administrative experience, and those who know say he was a very poor executive, partly because he was too exacting of his subordinates. If the whole story is ever told, it should be a lesson to all citizens that there is no substitute for business experience.

## CHANCE TO USE WATERWAY FLEETS

Pittsburgh, Penn.: Sand and gravel producers on the Ohio, Mississippi, Missouri and tributary rivers, may find use for their barges and towboats hauling oil and other freight, if they are no longer needed for sand and gravel. Inland waterway transportation managers estimate 1,250,000 bbl. of oil must be moved, in addition to what is already being moved on these rivers.

## BIGGEST CONSTRUCTION YEAR IN HISTORY

Washington, D.C.: The year 1942 came to an end with a volume of construction estimated at \$13,500,000,000 - a record for all time. Military and Naval construction more than doubled as compared with 1941. Factory construction was up 80 percent, but private construction was cut in half. Most of this construction was so concentrated that many localities did not share in it. Portland cement production is estimated at 180,000,000 bbl., also an all time record. Probably sand, gravel and ready-mixed concrete production established similar records. What of 1943? A sharp falling off is predicted; 1,000,000 construction workers are expected to be turned loose. Yet there are localities where war work will continue at record rates throughout the year.

## GOOD YEAR FOR RAILWAY BALLAST? MAY BE!

Chicago, Ill.: Rock products producers are interested in what happens to the railway labor demand for fantastic wage increases, which would wipe out all the profits of the railways. Producers are interested in those railway earnings, because for the first time in many years the railways are getting in financial shape to do extensive track work. Not now, probably, but as soon as the war ends - if the tracks stand up under their present beating until then.

## NO NEW LIME PLANTS

Washington, D.C.: Defense Plant Corporation has made commitments of \$370,511,-118 for magnesium plants, but it would not appropriate anything for commercial lime plants. A committee of the lime industry after a survey decided no new plants are required. The previous experience of the R.F.C. in the lime industry at Bellefonte, Penn., was said also to be a factor.

## PROGNOSTICATIONS OF AN ECONOMIST

Cleveland, Ohio: Brig. Gen. Leonard P. Ayers, economist and vice-president of the Cleveland Trust Co., has made these predictions for 1943: We will still be engaged in active warfare a year from now. Industrial production, as measured by the Federal Reserve Board, will be 10 percent to 15 percent above 1942. National income, which will be about 112 billions in 1942, will increase 15 percent to 20 percent. Wholesale prices will advance 4 percent to 6 percent from 1942 to 1943. They increased 13 percent from 1941 to 1942. Cost of living, which increased 10 percent this year, may be expected to rise 5 percent to 10 percent. Dollar volume of all retail store sales will decrease by 10 percent to 15 percent. Civilian employment of non-farm workers will increase 3 percent to 5 percent, on the average, over 1942. Steel ingot output will rise 4 percent to 6 percent, to a new peak. Freight traffic on the railroads, as measured by ton-miles, will increase about 10 percent.

## LAST WORD ON MONTGOMERY WARD CASE?

Chicago, Ill.: On November 5, Montgomery Ward & Co., of which Sewell L. Avery, U. S. Gypsum Co., is president, was ordered by the War Labor Board to sign a contract with a C.I.O. union, including a "maintenance of membership" and dues check-off clause. On November 17, the company refused to sign unless directed to do so by the "President as Commander-in-Chief in time of war." The President issued an order as President. The company then wrote in a clause that it was signing the contract under the President's order, but also "under duress." The C.I.O. union, backed again by the W.L.B., refused to sign unless the duress clause was removed. The company again refused to sign unless ordered to do so by the "President as Commander-in-Chief in time of war." On December 12, the President wrote Mr. Avery: "As Commander-in-Chief in time of war I hereby direct Montgomery Ward & Co. to comply, without further delay, with the National War Labor Board's directive order of December 8, 1942." Possibly, on the face of it, it may look as if the union triumphed over Mr. Avery. But, in the course of a long and successful business life, Mr. Avery has seldom if ever admitted defeat. We suspect that he has established to his own satisfaction, at least, that the company actually did sign "under duress;" and that while patriotism and good policy forbid contesting his case now in time of war, he may successfully contest it in time of peace when the President's powers as Commander-in-Chief do not extend, or at least didn't prior to the New Deal, to "government of the people, for the people, by the people" through Presidential decrees, without legal sanction of the people's chosen representatives in Congress assembled.

*The Staff*





# EVERY MINUTE COUNTS



● Fleeting minutes make hours. And every hour lost means delay in the Victory which America is determined to win. Every minute counts in the production and handling of war material and supplies.

Plymouth Gasoline and Diesel Locomotives are making "the loads count" in many of America's outstanding war

plants. They are performing smoothly and efficiently . . . hauling materials with speed and safety.

Plymouth Locomotives are built in sizes from 5 to 80 tons.

If your plant is engaged in war production and you have a haulage problem . . . write. It may be possible we can help you.

## PLYMOUTH GASOLINE and DIESEL LOCOMOTIVES

PLYMOUTH LOCOMOTIVE WORKS

Division of The Fate-Root-Heath Co. PLYMOUTH, OHIO, U. S. A.

# Cedarapids Equipment helps do the Impossible...

*on the toughest highway job ever undertaken*

The Alcan Highway! Its completion is another case of accomplishing the apparently impossible. We are proud—and we know the Contractors and the War Department are grateful—that Cedarapids Morok and Junior Tandem portable crushing plants had the performance ability to meet the speed, tough conditions, and rigid specifications of this great job.

*for your aggregate-producing needs*

Investigate the superior feeding, crushing, screening, truckloading and portability features of Cedarapids Tandem Plants. Models to meet all conditions. Also write for complete information about other Cedarapids equipment for stone-crushing, material handling, and asphalt-mixing.

## Cedarapids

Master Tandem portable crushing plant for gravel or rock. Big capacity. Low-cost operation. Drives without chains or sprockets.



Made by IOWA MANUFACTURING COMPANY • Cedar Rapids, Iowa, U. S. A.

# SAVE

*up to 40 minutes  
per day per truck!*

Defense construction of all kinds needed in a hurry! This Rex Hi-Discharge Moto-Mixer is one of countless Rex's filling this need on defense projects all over the western hemisphere.



A SAVING of 40 minutes per day per truck means a lot these days on any ready-mixed job. And that's what Rex Moto-Mixer users are getting these days, thanks to *quick-as-a-flash end-charging*. Rex has eliminated the time-wasting charging door of ordinary truck mixers and the need for having truck operators leave their cabs during charging operations. This alone saves as much as 5 minutes a batch!

This alone is the reason why fleet operators are standardizing on Rex. This alone would be reason enough why you

should standardize on Rex in your own fleet—but there are others, too.

For instance, the Rex Hi-Lo mixing action means faster and more thorough mixing; and the handy Rex Quint-Spout makes discharging easier, under all conditions.


You'll get a new slant at what a truck mixer can offer you in the way of speed and economy on today's ready-mixed jobs, if you send for the Rex Hi-Discharge Moto-Mixer Catalog. Just address 1649 W. Bruce St., Milwaukee, Wisconsin.



## MOTO-MIXERS

HI-DISCHARGE AND CONVENTIONAL TYPES

CHAIN BELT COMPANY OF MILWAUKEE



# Keeping a Time Honored Tradition Alive

*and Making the New Year  
a Living Issue*

Again, the time is at hand, when that wholesome American custom, of extending Greetings and New Year's Wishes, is observed by men of all stations and walks of life. It is a time of goodwill that springs from a spirit, grateful for the things we have and enjoy as a liberty loving people. And, it is a time of inventory and resolve—when the worn page of the past year is reviewed, turned and a new one greets us as we make a fresh start.

While endeavoring to look ahead, the year 1943 takes on a new significance. Heartened by what our armed forces are doing, we as a Nation have been spurred to greater action. And many of us, now more than ever, are striving to match the valor and sacrifice of our boys, so that throughout the coming year we can be happy in the thought of jobs well done—jobs that will hasten early victory and preserve that which we cherish and hold dear.

It is in this spirit, coupled with a desire to be of the greatest possible service, that we and all Austin-Western Distributors extend to you and yours our wishes for health and success, here at home as well as abroad.

## THE AUSTIN-WESTERN ROAD MACHINERY CO.

Aurora, Illinois, U. S. A.

Distributors in Principal Cities • Cable Address: Awco, Aurora

# Austin-Western

### WITH SERVICE DOUBLY IMPORTANT

during the duration, you will find Austin-Western Distributors and their Staffs ready and willing to give you all possible help and cooperation. The flag markers on the map indicate nearby service and spare part headquarters throughout the United States.



# Swinging Jeeps across the Creeks...



## ROEBLING "Blue Center" won't let them down!



It's a fast-flowing stream. A pontoon bridge won't do... So watch the Engineers swing one of their mobile cableways into action. A soldier swims across and a boat follows the line that was lashed to his body. Then comes the Roebling guy lines, bridge cable and anchorage tackle. In no time at all, the motorized winches are hauling jeeps and trucks across the 700 foot span.

It's another of those wartime miracles where the Corps of Engineers wrote the ticket and Roebling supplied the wire-

making experience and the wire rope.

Experience from a hundred industries... and steel that exactly meets the needs of each. Wire rope... right for factory cranes or power shovels or bulldozers... right for victory ships or oil well lines or mine hoists. Experience that is woven into every inch of Blue Center, giving it the stamina to withstand unusual loads on the battle or production line.

JOHN A. ROEBLING'S SONS COMPANY  
TRENTON, NEW JERSEY  
Branches and Warehouses in Principal Cities



### WIRE ROPE IS INDISPENSABLE TO WAR

You can do your part to speed output and conserve steel for all America by getting the most out of the wire ropes you have. Faulty sheaves, for example, may be killing your ropes... preventing them from delivering the full service life that has been built into them. Here are a few things to look for:

- 1 See that no sheaves are out of alignment.
- 2 Check with a gauge for deeply worn or cut grooves.
- 3 Watch out for broken rims.
- 4 Check for worn or damaged journals that cause sheaves to stick or wobble.

- 5 Check for bent shafts that cause whipping or vibrations.

To help you inspect wire rope sheaves systematically and easily, we have prepared the helpful pamphlet shown left. Our nearest office will furnish as many copies as you need.

**SPEED SPEED SPEED...**

**That's what  
you get with**



**THE SENSATIONAL NEW**

**HERCULES DYNAMITE CARTRIDGE SHELL**



**SPEED IN PREPARATION.** No time lost in slitting cartridges. Just put the regular size cartridge in the hole and tamp.

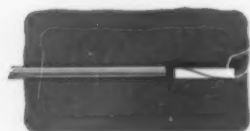
**SPEED IN TAMPING.** There is no spillage of powder and no mess, because concentration of charge takes place *inside the wrapper*. Thus, loading is simple and quick—even in uppers.

**SPEED IN OUTPUT.** Tamptite concentrates the charge where you want it, which means better breakage of material, easier handling, faster production. Ask Hercules for Tamptite cartridges on your next dynamite order.

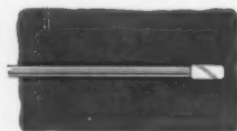
**HERCULES POWDER COMPANY**  
INCORPORATED

946 KING STREET • WILMINGTON • DELAWARE

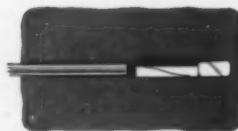
**QUICK LOOK AT TAMPTITE IN ACTION!**



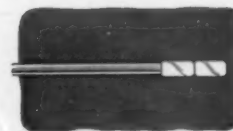
The regular-size cartridge goes in the bore hole. Note the space to be filled.



Pressure from the tamping rod compresses the powder to fill the space.



Another cartridge goes in—Compaction takes place inside the wrapper.



The charge is concentrated for better blasting results.

# What steel company made cannon balls for George Washington's Army?



## We've Helped to Arm America for Every War...

**W**HILE the Taylor-Wharton Iron & Steel Company derives greatest satisfaction from its constructive peacetime contributions to metallurgy, its history reveals a unique record of service to America in wartime.

In 1775, the original company, Union Iron Works, turned its full capacity to the production of cannon balls, pig and fabricated iron to help the colonial patriots win America's freedom.

Again in the War of 1812—Mexican War of 1846—Civil War—Spanish-American War—World War I—and now, in World War II—the predecessors and present company have enlisted their facilities in America's cause.

With an unbounded faith in America's strength and future—based upon 200 years growth with her—we are exerting every effort to the preservation of the freedom we helped to win.

Left: Tisco Manganese Steel Tank treads for World War I and II.

Right: 155 m.m. shells for U. S. Army in present war.



Original molds used to cast cannon balls for the Continental Army, 1775-1781.

### Taylor-Wharton Products

- Manganese Steel Castings
- Alloy Castings and Forgings
- High Pressure Gas Cylinders
- Manganese-Nickel Welding Rod
- Alnico Permanent Magnets
- Special Trackwork



## Taylor-Wharton Iron & Steel Co.

HIGH BRIDGE, NEW JERSEY • EASTON, PENNSYLVANIA



You've Got to Know  
the Angles to Keep Shifts  
Running 'Round the clock and  
'Round the Week

**HERE THEY ARE...**

**Right Angled Loading for  
ALL THRUST Bearings**

TYPE DT DOUBLE ACTING  
THRUST

for slow-speed service or for  
higher speeds where thrust is  
not reversed frequently.



and-

**Right-Angled Loading for ALL RADIAL Bearings**

TYPE MCS  
DOUBLE WIDTH  
RADIAL

Interchangeable with  
standard double-width  
bearings made to  
S.A.E. dimensions.



Yes Sir, smart production and maintenance men are paying a lot of attention to the Angles these days—especially when it comes to anti-friction bearings. They know you can't expect precision bearings to carry complex loads at high speeds hour after hour, for day on end, without frequent down-time for servicing and replacements. That's why they're demanding the higher service factors provided by Rollway's *right-angled* loading of solid cylindrical roller bearings.

Rollway splits every load into its two simplest components of *pure radial* and *pure thrust*. All oblique and compound loading is eliminated. Sliding friction is reduced to the vanishing point. And a more compact bearing assembly with more massive rollers of uniform cross section is the result. You'll notice improvement in bearing life, speed of operation and amount of down-time and service attention almost immediately.

#### Free Engineering Analysis and Bearing Recommendations

Let Rollway's bearing specialists examine your plans, especially your conversions, and tell you the right type and series for each bearing. There's no charge for this service. Most applications require only American standard metric dimensions and tolerances. REMEMBER, you can usually change over from other bearings to ROLLWAY'S of higher load capacities without increasing boundary dimensions.

# ROLLWAY

BEARING COMPANY, INC., SYRACUSE, N. Y.

BUILDING HEAVY-DUTY BEARINGS SINCE 1908

## BEARINGS

# Heltzel

## BINS FOR STORING, HANDLING OR BATCHING MATERIALS . . .

Have been placed under government regulations in order to help win the war. Our entire production has been earmarked for vital war effort construction.

If your operations are vital to our Victory Program we are in a particularly favorable position to serve you . . . to help speed up your material handling operations.

Complete information is available on Truck Loading Bins and Circular Storage Bins from 35 to 300 tons for sand or gravel . . . Portable Aggregate Batching Bins from 35 to 100 tons capacity for batch truck or truck mixer charging . . . Portable and Semi-Portable Bulk Cement Batching Bins from 100 to 750 bbls. capacity . . . Permanent Aggregate or Combination Aggregate and Cement Batching Plants from 100 to 400 tons capacity with batchers up to 5 cubic yards . . . Cement Tanks for storing, batching or re-handling systems from 300 to 1500 bbls. capacity.

**. . . INVESTIGATE !**

**HELTZEL SUPERIOR  
CONCRETE CONSTRUCTION EQUIPMENT**

MILITARY HIGHWAY FORMS

AIRPORT FORMS

CURB, CURB AND GUTTER OR  
SIDEWALK FORMS

PORTABLE AGGREGATE BATCH-  
ING BINS — 30 TO 100 TONS  
CAPACITY

PORTABLE AND SEMI-PORTABLE  
BULK CEMENT BATCHING BINS  
FROM 100 TO 750 BBLs. CAP.

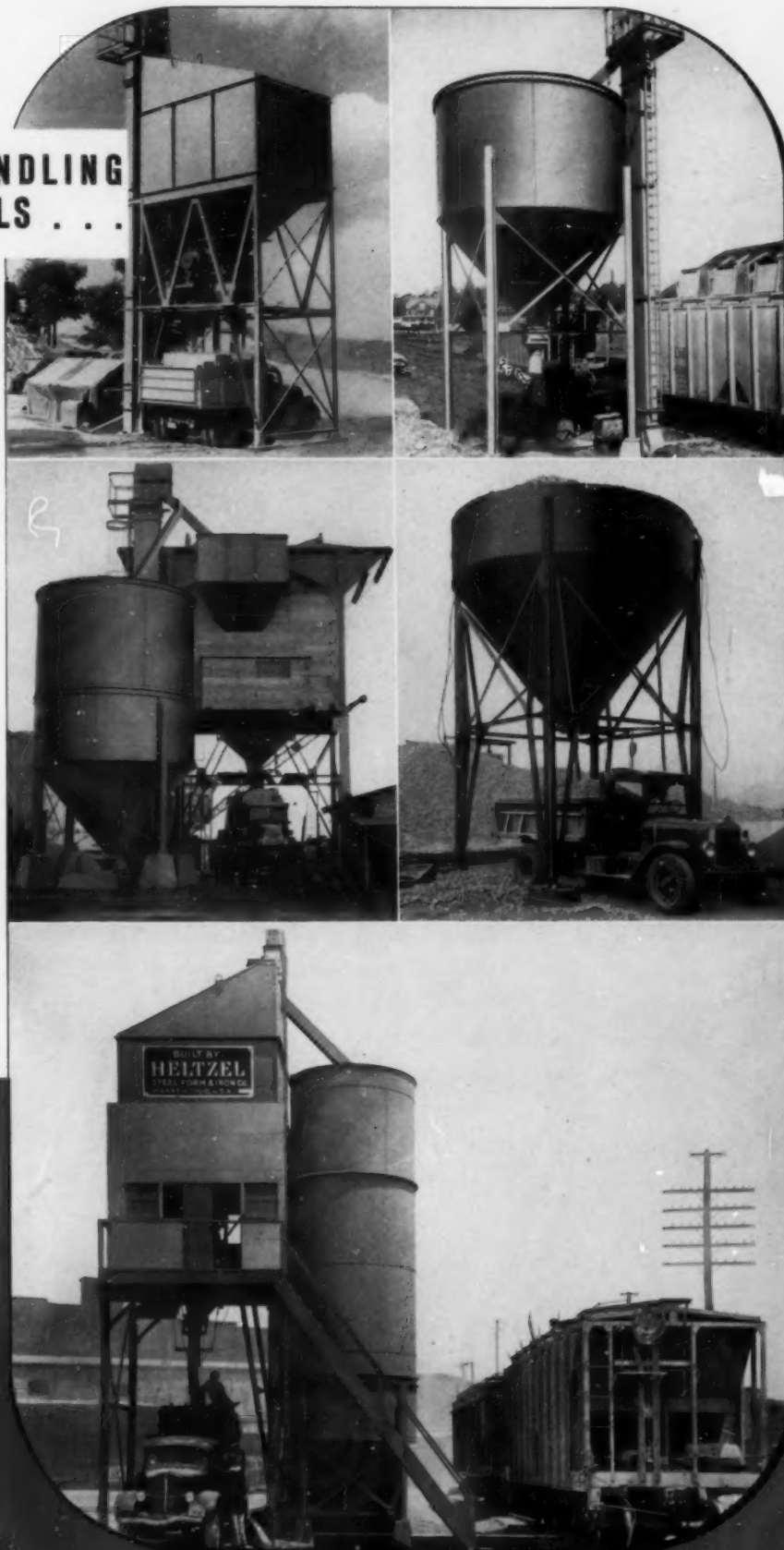
CENTRAL MIXING PLANTS

CEMENT TANKS TO 1500 BBLs.

TREMIE CHUTING

CONCRETE FLOOR HOPPERS

CONCRETE BUCKETS



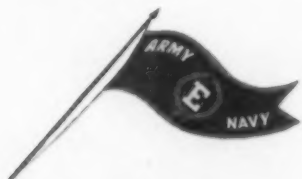
# HELTZEL

STEEL FORM & IRON CO.  
WARREN, OHIO • U. S. A.

# Barber-Greene Representatives AT YOUR SERVICE



B-G representatives can be of valuable assistance to you during the present emergency. **PARTS** Many carry in stock the B-G repair parts most frequently required. Others can assist you in ordering parts. **MAINTENANCE** They will gladly advise you on general maintenance. Many are equipped to bring your machine in and completely overhaul it. **RENTAL** B-G representatives are glad to assist you in locating machines for rental or will assist you in renting a machine which you have idle. **ENGINEERING SERVICE** Your B-G representative will gladly give you the benefit of his experience in any proposed changes in your material handling layout. **NEW MACHINES** New Barber-Greene are not available except on very high priority. If you are planning a job which will carry such a priority, your B-G representative will give you every possible assistance.



**BARBER**  
AURORA,



**GREENE**  
ILLINOIS

42-4

## BRANCH OFFICES

WASHINGTON ATLANTA  
BIRMINGHAM CAMBRIDGE CHICAGO  
CLEVELAND DETROIT MILWAUKEE

## REPRESENTATIVES

ALBUQUERQUE Contractors Equipment & Supply Company  
ATLANTA Yancey Bros., Inc.  
BALTIMORE Henry H. Meyer Company, Inc.  
BATON ROUGE Louisiana Tractor & Machinery Company  
BILLINGS Western Construction Equipment Company  
BINGHAMTON Ray MacDougall Equipment Company  
BIRMINGHAM J. D. Pittman Tractor Company  
BOISE Columbia Equipment Company  
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MIAMI Llewellyn Machinery Corporation  
MINNEAPOLIS Wm. H. Ziegler Company, Inc.  
MONTGOMERY Burford-Toothaker Company  
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PHOENIX Brown-Bewis Equipment Company  
PITTSBURGH G. N. Crawford Equipment Co.  
PLATTSBURG, N. Y. Vincent S. Jerry  
PORTLAND Columbia Equipment Company  
QUEBEC Mussen Canada Limited  
RALEIGH Carolina Tractor & Equipment Company  
RAPID CITY Rapid City Implement Company  
ROANOKE Roanoke Tractor & Equipment Company  
SALISBURY Carolina Tractor & Equipment Company  
SALT LAKE CITY Lund Machinery Company  
SAN ANTONIO J. E. Ingram Equipment Company  
SAN FRANCISCO Jenison Machinery Company  
SEATTLE Columbia Equipment Company  
SIOUX FALLS Dakota Equipment Co.  
SPOKANE Columbia Equipment Company  
ST. JOHN'S Newfoundland Tractor & Equipment Company  
ST. LOUIS L. V. Fraley & Son  
SYRACUSE Contractors Sales Company, Inc.  
TERRE HAUTE J. B. Freeman  
TORONTO Mussen Canada Limited  
TULSA Leland Equipment Company  
VANCOUVER A. E. Hunt  
WASHINGTON Paving Supply & Equipment Company  
WINNIPEG Frost Machinery Company



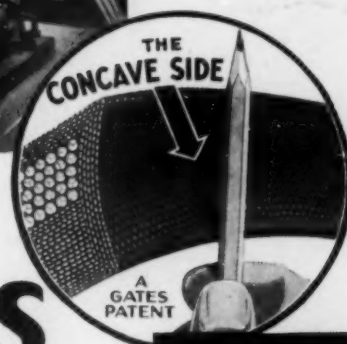
# This Simple Idea . . . is **SAVING BELTS** for *Industry...and Rubber for the Nation*

To see for yourself the belt-saving importance of the **CONCAVE SIDE**, just pick up *any* V-belt and bend it as it bends when it goes around a pulley.

As the belt bends, grip its sidewalls firmly with your fingers as in the photograph above. You will feel the sides of the belt *change shape*. If the sides were straight before bending, they will *bulge outward* as the belt bends. (See Figure 1 on the right).

Now look at Figure 2. Here you see how bending changes the shape of a belt that is built with the patented Concave Side. The side becomes perfectly *straight*. This belt, when bent, precisely fits its sheave groove. Here are the savings:—(1) There is no side-bulge. This means *uniform wear—longer life—a saving in belts* for you, a saving in rubber for the Nation. (2) The full side-width of the belt uniformly *grips* the sheave groove wall—carries heavier loads without slippage—another saving of belts and a saving in power, too!

Only belts built by Gates are built with the Concave Side, a Gates patent.



What Happens  
When a  
V-Belt Bends



FIG. 1



FIG. 2

## THE GATES RUBBER COMPANY

Engineering Offices and Stocks in All Large Industrial Centers

# GATES VULCO ROPE DRIVES

Chicago, Ill.  
549 West Washington

New York City  
215-219 Fourth Avenue

Birmingham, Ala.  
405 Liberty National Life Bldg.

Los Angeles, Cal.  
2240 East Washington Blvd.

Denver, Colo.  
999 South Broadway

Dallas, Tex.  
2213 Griffin Street

Portland, Ore.  
333 N. W. 5th Avenue

San Francisco, Cal.  
2700 16th Street



## Buell Dust Recovery Systems help put it there



High Explosives are "booming" these days. America's arsenals are turning out astronomical quantities of bombs, shells and torpedoes...every one with a deadlier-than-ever "boom" for our enemies.

Sulphuric acid is important in the manufacture of explosives, but absolute purity of the acid is essential. Buell Dust Recovery Systems are used in conjunction with the contact method of making sulphuric acid because their high efficiency in removing contaminating flue dust from the sulphur dioxide gas assures purity in the finished product.

This is just one of many ways in which versatile Buell Dust Recovery Systems

are helping industry achieve its war production goals by preventing contamination and salvaging critical materials for re-use. The van Tongeren "shave-off"—an ingenious design feature found only in Buell cyclones—insures exceptionally high collection efficiency, low operating cost and long life. Buell cyclones have no moving parts and require little or no maintenance or attention.

Buell Dust Recovery Systems easily handle high temperature gases, and can be installed for any desired capacity from 300 c.f.m. up.

Factual 28-page book. Write for  
Bulletin R-43.



BUELL ENGINEERING COMPANY, INC.  
2 Cedar Street, Suite 5000, New York  
Sales Representatives in Principal Cities



BUY WAR BONDS AND MAKE THE AXIS BITE THE DUST

# Now That War Regulations Limit the Building of New Truck Mixers

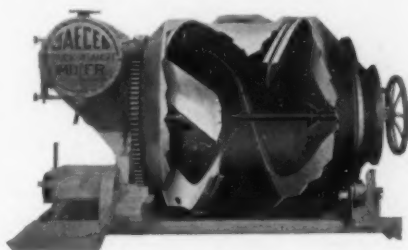


## WE ANSWER 2 QUESTIONS ABOUT JAEGER TRUCK MIXER FLEETS



### 1. "HOW LONG CAN MY PRESENT TRUCK MIXERS LAST?"

From the experience of hundreds of Jaeger fleet owners, over many years, it is safe to say that any Jaeger Truck Mixer, now in good condition, can be kept successfully in service for the duration of the war. Certainly, if given proper care and maintenance, your Jaeger Mixing Unit should easily outlast their present trucks.



Note that Jaeger's "Dual-Mix" Drum is self-cleaning — no pockets or corners to "build up" with concrete and require elaborate care or blade replacement.

Jaeger's Water System is simple, trouble-free. Clean out trap weekly. Give sensible winter care.

Jaeger's Transmission is shock-proof on all models; 2 speeds save engine wear. Lubricate at least daily.



The Jaeger Frame and 3-Point Mounting are time-tested — distribute weight to best advantage for long truck and tire life, prevent misalignment. All load bearing parts are of massive strength.

### 2. "WHAT WARTIME MAINTENANCE MEASURES DOES JAEGER RECOMMEND?"

Because of America's vital need for concrete and the fact that most equipment can no longer be replaced, your present truck mixers are literally priceless.

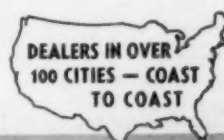
- A. Make each of your operators responsible for his unit. Send for Jaeger Instruction Manuals and insist on careful operation and daily cleaning and lubrication as specified.
- B. ARRANGE WITH YOUR JAEGER DISTRIBUTOR FOR A REGULAR 30-DAY CHECK-UP ON EVERY MACHINE.

This is your best insurance policy against breakdowns, long lay-ups and costly repairs. Jaeger service men know Jaeger mixing units just as your truck dealer knows his trucks.



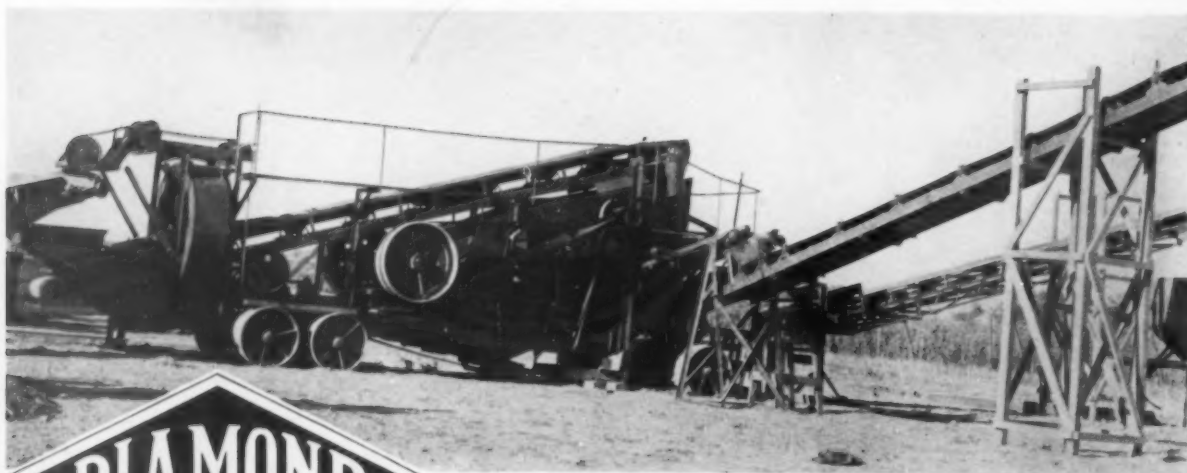
Moreover, your Jaeger dealer carries thousands of repair parts in stock — as near to you as your telephone — to keep your mixers rolling. Back of him is our corps of Jaeger traveling engineers, on call to help Jaeger customers meet major problems of equipment maintenance or operation.

This nation-wide Jaeger organization is at your service. Use it to maintain *your own* service, so that you can help America to win this war.



# THE JAEGER MACHINE COMPANY

603 Dublin Avenue • COLUMBUS • OHIO



When Contractors and Quarrymen Need  
Maximum, NON-STOP Production—

## they specify a DIAMOND PLANT

RECORDS LIKE THESE  
SPEAK FOR THEMSELVES

### 1942—S.W. Ordnance Job

A Diamond No. 95 Plant is turning out  
**4,000 TO 6,000 TONS PER DAY**  
on a one million ton aggregate project. You  
can't do that without BIG capacity, and the  
toughest kind of "no-shut down" dependa-  
bility.

### 1941—Big Western Ordnance Job

producing 2" minus crushed gravel for road-  
way sub-base and railroad ballast. DIAMOND  
No. 95 plant.

Started—May 12, 1941

Finished—November 6, 1941

Calendar time—179 days, 24 hours a day,  
7 days a week—total elapsed time—4,296  
hours

Scheduled operating time—3920 hours

Actual operating time—3320 hours

**or 84% OF SCHEDULED TIME**

Aggregate production—463,223 cubic yards

119 cu. yds. per scheduled hour for entire  
period

139 cu. yds. per actual operating hour for  
entire period.

4,000 tons per day! 7 months' continuous run!  
Operating time 84% of scheduled time! Re-  
sults like these don't grow on trees, but they  
do reward the good judgment of men who  
select DIAMOND "ROTOR-LIFT" Plants for  
the biggest and most urgent assignments in  
America's vast War program.

### The Exclusive DIAMOND "ROTOR-LIFT" Gives You Unequalled Advantages

Each unit in the DIAMOND portable plant—jaw  
crusher, roll crusher, vibrating screen, conveyors—is  
a proven veteran, individually. In addition, the com-  
plete DIAMOND Plant is designed as a synchronized  
unit, perfectly balanced for smooth operation and maxi-  
mum capacity, ruggedly built for long, non-stop service  
with an absolute minimum of stoppage for maintenance.

**WRITE, WIRE OR PHONE** for complete informa-  
tion and prices on plants or any individual units  
or installations. Our engineers will gladly help  
you to solve any crushing, screening or convey-  
ing problems.

### DIAMOND PORTABLE PLANTS IN MANY SIZES AND TYPES

QUARRY PLANTS—port. and sta.

No. 20—Portable, non rotor-lift

No. 36—Portable, rotor-lift

No. 65—Portable, rotor-lift

No. 95—Portable, rotor-lift

Portable washing-screening Plants

Portable and stationary Crushers

Vibrating, rotary and scalping

Screens, Conveyors, bins, feeders,

etc.

## DIAMOND IRON WORKS, INC.

ESTABLISHED 1880

AND THE MAHR MANUFACTURING CO. DIVISION

1800 Second Street N.

MINNEAPOLIS, MINN.

# Clippers for Victory!



All of the Buckeye Clippers coming off the assembly lines these days are going into vital war construction, near and far, for Uncle Sam. So—in a way—they are working for you fellows who could use a Clipper or two at this time, as well as for a lot of folks who have no direct need for one.

## GET SCRAP HAPPY

One way we can all help our war effort and get real satisfaction from it is to help round up all available scrap and get it to the mill. IT'S NEEDED NOW. Electro-magnet equipped Clippers are doing their part at yards and mills.

Clipper's Vacuum Power Control, which gets more yards handled daily—the control that is unhampered by any weather—is helping speed the day of Victory. With a lot of engineers, contractors and operators on war work, who have had an opportunity to see what the Clipper can do when put to the test, it will be Clippers for them from now on!

**BUCKEYE TRACTION DITCHER CO. - FINDLAY, OHIO**

**Built by Buckeye** ✓

Convertible Shovels



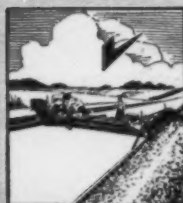
Trenchers



Tractor Equipment



R-4 Finegraders



Road Wideners

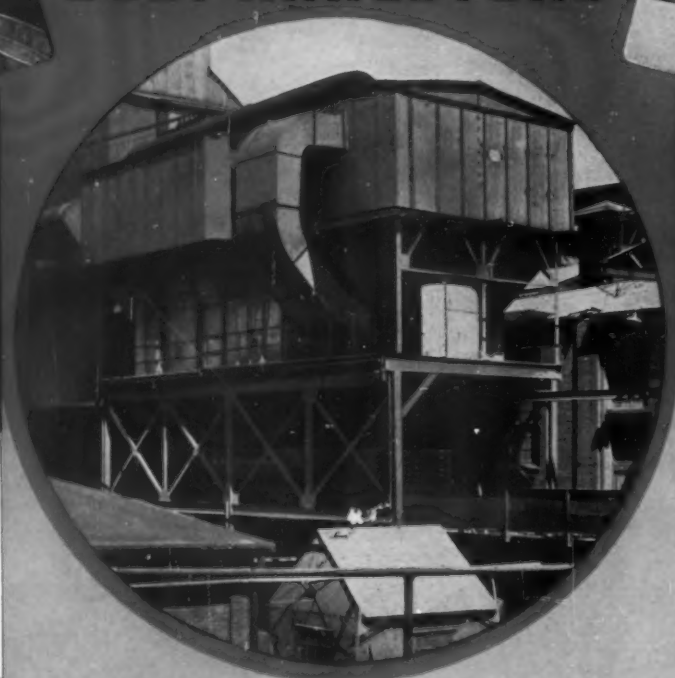


Spreaders



# PARSONS

## OVAL-BAG DUST ARRESTORS



*They* **CLEAN · COLLECT · CLARIFY**

• Parsons Oval Bag Dust Arrestors are the choice of the trade because they have over a quarter of a century of specialized engineering experience back of them which is brought out in their many exclusive features. For instance Parsons **PATENTED OVAL FILTERING BAGS** have all the advantages of envelope and cylindrical types and have an extremely long life.

**NON-RUSTING ARRESTOR CASE** makes maintenance and inspection possible on clean air side and permits instant spotting of leaks. **SIMPLE TEXROPE DRIVE** and balanced eccentric mechanism operates rocker type bag-shaking device, 100 per cent discharge. **HEAVY DUTY WELDED HOPPERS** discharged by non-clogging rubber sealed hopper valves easily operated and absolutely dust-tight.

**PARSONS** . . . a name which means over a quarter of a century of specialized engineering experience in dust control

**PARSONS** *Engineering* **CORP.**

2545 EAST 79TH STREET

CLEVELAND, OHIO



## In The Lighter Vein?

**I**T HAS BEEN SUGGESTED "ye undersigned editor," having a bit of a reputation for a sense of humor, should conduct a column in **ROCK PRODUCTS** "in the lighter vein." We often wonder just what "in the lighter vein" means. So many attempts to be facetious or ironic go awry.

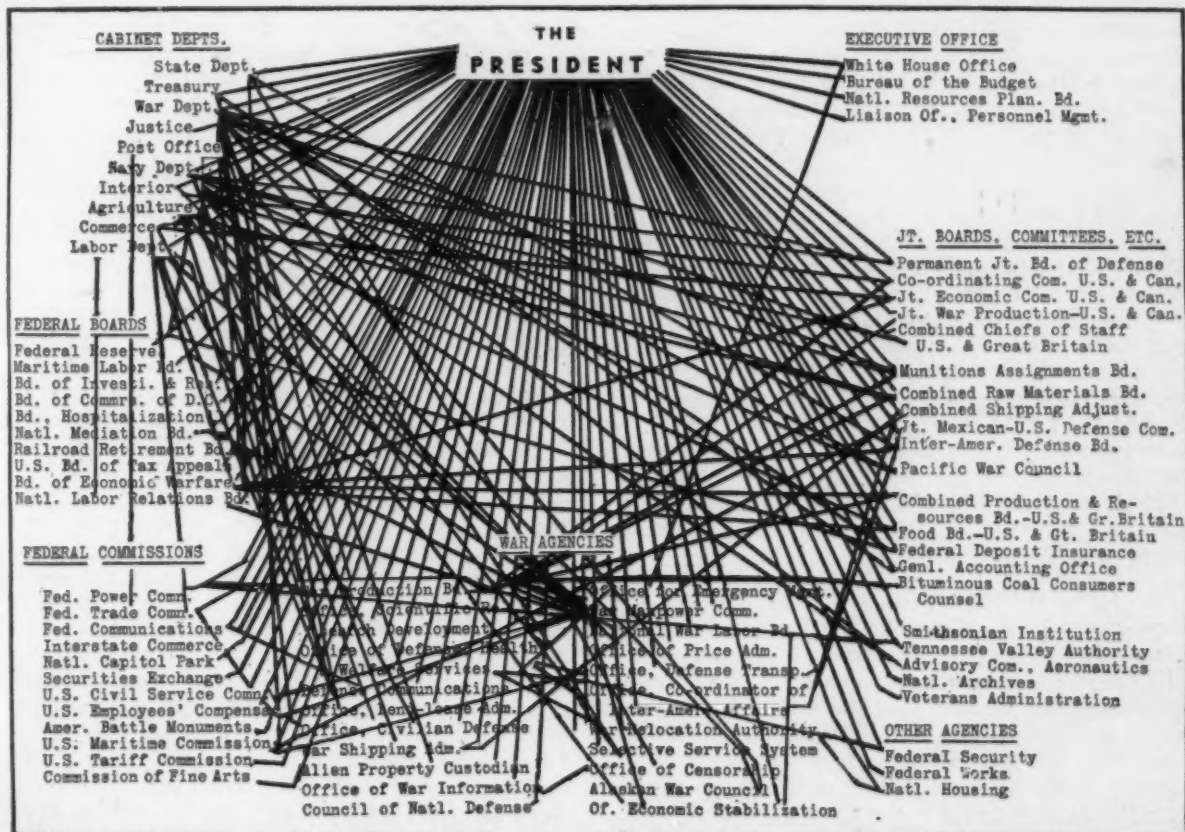
At this cheerful time of the year, under stress of war conditions, at home and abroad, when we find time to relax, if relaxation is possible at all, we hope our readers will accept in the same spirit they are offered these two bits of facetious wisdom we have extracted from contemporaries.

The one (Foiling the Enemy) is a clipping from the **PATHFINDER**, a Washington, D. C., publication; the other is a chart from the **CHICAGO TRIBUNE** (forgive us, please, dear reader!), which credited it to the Citizens Bureau of Governmental Research. Since the **TRIBUNE** pub-

lished the chart in November, a "Food Czar" and a "Manpower Czar" and an "Economics Czar" and a "Petroleum Czar" have been added, all interconnecting with other war agencies (which are never abolished) headed by "The President"—here is an editorial without words!

### FOILING THE ENEMY

War times always start a swarm of tall stories, some of which are highly colored and some quite amusing. One that popped up and drew wry smiles was the tale that a Nazi spy was instructed to go to Washington and make a careful survey of all Government buildings and official activity and map out a bombing raid aimed at the most vital spots where hits would have the greatest crippling effect. The spy, in making his report, pronounced the undertaking impossible because the Americans, he said, had been clever enough to have the same activities carried on in two or three different buildings at the same time, so duplicating Government work that if any phase of it were stopped at one place it would still be going on at two or three more places.



The present war organization as charted by the Citizens bureau, which likened the effort to an attempt to drive four 20 mule teams at once in different directions with no harness and tangled reins.

# Where Are We? Whither Bound?

## Rock Products' Readers Give Benefit of Some of Their Thoughts

**F**OR SEVERAL YEARS we have foregone sending annual questionnaires to readers, because we knew they had been questionnaired to the limit of human endurance. Yet, we thought the present conditions justified another attempt, although our readers, ourselves and everybody else probably have spent more time this last year on questionnaires than in all previous time. Under the circumstances, the returns were better than anticipated—and we are grateful to those friends who took time and trouble to give us the benefit of their thoughts on current problems of the industry. These we have here analyzed and summarized.

### Labor Turnover

As was to be expected, there has been a large turnover in personnel in many rock products plants. Until recently there was no selective service ruling which permitted deferment of employees in most of these industries. Many companies, including those in the cement industry, did not ask for preferential treatment. The result is that there are instances where the turnover has been as high as 300 percent. Such instances are almost always in the highly congested industrial districts where labor is ordinarily of a more transient type. These men were more eligible to military service as well as to offers of much higher wages in war plants. In the country districts where the personnel of the industry consists of long-time employees with homes and families there has often been very little turnover.

There are several instances already where cement companies are turning to women employees for oilers, and general handiwork. We have yet to hear of women kiln burners, but there may be some. Since we read about women stevedores being employed at West Coast ports, it would seem that no man's job is secure from invasion by the "weaker sex."

The executive personnel of the industry has not suffered a great deal, but skilled employees, especially those with technical education and experience, are getting very difficult to find. This situation is expected to get much tighter after the first of the year, and the outlook for these industries as a whole appears to be so uncertain that few companies have now any definite program for rebuilding their personnels.

### Opportunities Coming for Technical Men

Possibly because technically trained and educated men are in so much demand for the armed services and the war industries, and because the war itself is demonstrating the value of technical men, there seems to be a distinct tendency to favor technical men when the time comes to rebuild company personnels. For example a one-plant cement company official writes: "As soon as the war emergency is over, we contemplate employment of two or more young men who have advanced technical training, but per-

haps very little industrial experience. A program of employment will be worked out that will tend to develop these men as skilled specialists in our industry. The immediate objective will be to build value in them for this particular company, but in so doing we shall build value for the entire industry."

We think this is a splendid attitude and hope many other companies, both big and little, will do likewise. Our industries have never had a surplus of technically trained men, and the end of the war will turn many of these loose. Our industries should do their part, and do it now, to give these young men some assurance that their technical ability can be and will be used in peace-time industry of all kinds. They should have something to look forward to when they have completed their service to their country—and industry should be forward looking enough to see where and how their talents and training can be profitably employed.

### Real Scarcity of Skilled Men

The scarcity of skilled men such as shovel and crane operators and hoisting engineers is the biggest handicap many producers have had to meet. This has been caused to a large extent by the much more attractive wages offered by contractors on war construction projects. It is a condition that should improve with the completion of many of these projects and the announced intention of the government not to proceed farther with many other projects. It is said that restriction of new construction in 1943 will free 1,000,000 men to other employment, or to the services. In a few localities where large projects have been completed there even now is an actual surplus of such men. Of course, the fly in the ointment is that when these construction projects are through, there is likely to be little reason to want men for getting out construction materials, but it should ease the problem of chemical and metallurgical lime and limestone producers, foundry sand producers, and many other branches of the industry which are strictly war industries.

An Eastern lime and limestone producer gives a specific example of his personnel difficulties. The company had always employed young men because they were ambitious, and only older men are now available. "They have set ideas and are too high priced, if any good"—a good example of the reason for the prejudice against hiring the older men. Also, in this industry where prices are not elastic, the 40-hour week has been a decided handicap. In order to avoid paying overtime the men were worked 40-hour, 5-day, shifts in seven 24-hour days. This the men did not like because they didn't want to miss the 6th day's work, and they left to get work where they could put in the extra day at time-and-a-half.

Here is a good example of why the 40-hour week

does not fit any industry except those that can pass along their costs directly or indirectly to the government. When the President and other government officials say that the 40-hour week does not prevent any employer from operating as many hours as he chooses, they obviously dodge the real point of the issue, which is that a great many employers simply cannot afford to operate a shift of more than 40 hours a week. Their costs would go sky-high and there is no provision for recovering such costs.

Another lime producer writes that he has had to go to a 6-day week with time-and-a-half for the 6th day in order to keep his men. He says: "The biggest thing you can do for industry is to get agitation going to abandon premium pay for over-time." It should be obvious, even to our "manpower czar," that there are many industries which cannot pass on the extra costs, and that it is impossible to employ effectively what labor is available for such industries, if they are compelled to be operated to avoid a 6-day week.

Several quarry operators say that it is particularly difficult to keep a full crew employed because of the competition of nearby war industries. In the previous world war, and the period immediately following, quarry labor was the most difficult of all to obtain. Since then there has been a very general mechanization of quarries, yet work in quarries still does not appear to be attractive if other jobs are available. The quarry industry perhaps needs to do some honest-to-goodness personnel educational work, which will give its employes a greater appreciation of the importance of their work to many vital industries. It is good, healthful, outdoor work, but perhaps is too frequently associated in the minds of workers with the prison activity of "making little ones out of big ones."

Almost without exception concrete products manufacturers are experiencing great difficulty finding new employes, chiefly because they have only a civilian industry rating. Even in this industry scarcity of labor has been a more important factor than scarcity of repair parts and operating supplies.

#### **Scarcity of Repair Parts**

In the cement industry, up to the end of November, there had been no great difficulty in securing repair and maintenance parts. There had been delays, and much expense in unwinding red tape. The outlook for 1943 is not so favorable, and most manufacturers anticipate more difficulty in procuring repair parts. This may or may not be so. There is some reason to believe that if the war program is properly handled, there will be enough steel to go around. Already, according to some sources, we are getting ahead on such war implements as tanks, which are being rendered more or less obsolete, anyhow, by heavier and faster-moving field guns. Also, it is being realized that there is little point in building huge stocks of heavy equipment, which can't be moved to the battle fronts for want of ships. Eventually, our vast war program will be better balanced, and then essential civilian industries may find better picking.

The sand and gravel industry has experienced considerable difficulty in some instances in getting repair parts. This may have been caused by a lack of knowl-

edge of how to proceed, or to the fact that many concerns in this industry are too often rated as relatively insignificant, or it may have been that the production of the plant was not close enough to actual defense construction to be rated essential. Even in this industry, however, personnel shortage was far more hampering to operation than shortage of repair parts. A few producers were handicapped by car shortages.

Quarry and crushed stone plant operators find repair parts increasingly hard to obtain, unless perchance they are producers of metallurgical limestone, in which case they are accorded all the priority of any branch of the steel or other metallurgical industry. The situation in regard to agricultural limestone is far from clear. Farmers are asked to raise larger crops with the use of less fertilizer, and in most instances agricultural lime and limestone are the answer, yet no provision has been made to make this an essential industry in 1943, and many large commercial limestone producers are contemplating serious curtailment of production of agricultural limestone because they cannot afford to operate their plants for this product alone at present prices. With them it has always been a byproduct.

#### **No Extraordinary Plant Rehabilitations**

Since plants that have been in active production have had no great difficulties in getting repair and maintenance parts, it follows that producers are nearly unanimous in their statements that only normal maintenance and repair will be required when the war is over. Of course, a great deal depends on how long the war lasts, and how much the plants are used from now on, because such exposed plants and pieces of equipment deteriorate much more rapidly in long shut-down periods than they do in continuous operation.

There are, however, particularly in the crushed stone industry, instances of deferred repair and maintenance, which will mean more than normal rehabilitation. There is reason to believe there will be more new equipment purchased by this industry after the war because of obsolescence, than because it is worn out. The same is true of the sand and gravel industry. Both industries anticipate keen competition when peace reigns again, and they realize it may be a kind of competition in which ownership of portable units of equipment will be desirable.

The portland cement industry is the only one that exhibits indications of considerable plant revision. We presume this is because the plant rehabilitation program, in which the industry was extensively engaged at the outbreak of war, was only temporarily interrupted and will continue as soon as machinery and equipment are available.

#### **What Happens to Private Enterprise?**

Anybody's guess as to what happens in this country following successful conclusion of the war is as good as another's. Nevertheless it is interesting to gather the opinions of men in these industries, because in general they are hard-headed business executives whose chief concern is and will be to keep their organizations going as successfully as possible under any and all conditions that may have to be met.

They all expect to find a continuance of government regulation and never a return to "normal" conditions as we knew them a few years ago. Not that there is no hope of an eventual return to "a conservative administration," for most distinctly there is; but as one cement manufacturer puts it: "When and if we have a conservative administration, government regulation and control of private enterprise will gradually slacken, but so many changes have been made during the New Deal administrations that this country, in all probability, never will get back to normal conditions as we knew them years ago." This is said, apparently, with a shade of regret, but another writes: "Although not a New Dealer, I believe there are some practices and conditions of several years ago, which we would be better off without."

We think that is the more enlightened point of view, because no one but an incurable die-hard can expect a return of unfettered free enterprise. While we doubt that the philosophy of the American system of free enterprise is in any great immediate danger of discard, it is obvious that the practice of free enterprise must conform to modern ideas of the responsibility of leaders of enterprise for the economic status of the general public. The public is speedily finding out what a bungling political or governmental bureaucracy can do to wreck its designs for happiness; it will turn eventually to natural leaders of enterprise for the answer. We hope the exponents of private enterprise will then have something better to meet the challenge with, than worn-out generalities and platitudes—truthful as these may be.

It seems to us that whether we like it or not (and who now does?) the common workmen are going to have much more to say about the management of industrial enterprises. They are trying to do it now by remote control through political pressure in Washington on incompetent bureaucracy. It would be much simpler and direct if each employer would meet the problem in his own plants and deal reasonably, fairly and effectively with the aspirations and desires of his own employees, and not have the issues foisted on him by Washington politicians, who seldom, if ever, are genuinely interested in the welfare of the workers, but only in using their normal discontent and restlessness for the selfish ends of politics.

We see in many of the new promotions to executive positions in industry management more and more tendency to pick men who are good practical psychologists—those with natural understanding of the peculiarities of mankind—rather than the two-fisted go-getter who could and did ride roughshod over personnel and competitors alike. Industry is now picking men whose chins are not quite so prominent and pugnacious, who perhaps are susceptible of being pushed around a little without losing their equanimity or their self respect or their tempers.

#### Post-War Operations

Defense construction projects have greatly enhanced a tendency (started long before) to a kind of national organization of large producers of aggregates and ready-mixed concrete. The story of the United States

Transit Mix Concrete Corporation, elsewhere in this issue, is a good example of this tendency. Contractors on large government projects, since the days of big dam building, have been turning to experienced aggregate producers to subcontract the preparation of aggregates. To serve such jobs, aggregate producers have had to develop widespread organizations and plants of a more or less transient character. The same has applied to ready-mixed concrete manufacturers in the case of many defense plants, airports, hospitals, and other big construction projects. It seems a natural development and one that may continue under post-war conditions, if the federal, state and local governments launch large highway and public works projects.

Relatively few established producers agree with this prediction, perhaps because they do not want to. Anyhow, whether there are more or fewer such nationwide operators depends largely on the kind of public works undertaken in the post-war period. If these are fashioned after the W.P.A. and its predecessors, local producers will be able to meet every need. If the public works are huge hydro-electric power plants, or for irrigation, or transcontinental highways, it is likely they will be served by new aggregates plants, especially built to serve them, if they are very far removed from established plants.

#### International Problems

No one seems particularly alarmed at the prospect of a huge national debt and the other social and political problems which will confront us in the post-war period. All expect a period of exceptional construction activity, although probably it will not get under way immediately. Those who remember the post-war period of 1919-1921, know that construction of much-needed facilities of all kinds was held up by prevailing high wages and resulting high costs. No private or public investor, or spender, believed such extravagant wages could be long maintained by those who stayed at home, while our soldiers who had fought for their country were returning and hunting for jobs. It was not until a general price-cutting and wage-cutting set in that people were induced to loosen their purse strings.

We expect somewhat the same conditions will confront us in the coming post-war period because war workers have been encouraged by those in high places to believe that somehow the government would continue to see that they get employment at present wages in the post-war period. To any man of common sense this is absurd. Our industrial life after the war will depend on our ability to compete in a world market, where things are expected to be sold at a profit, or at least for their cost, not given away as at present. With wage scales from four to twenty times what our foreign competitors will pay, our part in such a world economy would likely be very little. There will be no partiality shown American industry because Americans have bailed out their allies from a war that threatened their extinction.

On the contrary, the fact that we have incurred a per capita national debt several times theirs, that our labor wage scales are sky-high, that we have converted irrecoverable natural resources to their use

at our own expense, will all turn out to be very much to our competitors' advantage over us. Those things are not pleasant to contemplate, but we Americans have got to be realistic and make our plans for American industry accordingly. Our satisfaction as a people will have to come from the fact that we have proved ourselves "brothers under the skin," with freedom-loving people all over the face of the earth, and that we have saved our own skins at the same time.

If American business men and industrialists are to prove their capacity to take over and help to steer this country through the post-war period, it will be because they are hard-headed and practical enough to face these realities, and thus to compensate in some degree for the soft-headed idealist leadership of well-intentioned American politicians. Undoubtedly both points of view are necessary for a satisfactory solution, but the real job of making the men who work in industry understand that high wages are no ultimate measure of living standard must rest with industrial leadership. Our standard of living will be measured by the per capita amount of actual wealth in material things we are able to produce in competition with the rest of the world, at real wage levels that our competitors, not ourselves, will set for us, to a very large degree.

#### When the Bubble Bursts?

We have made a "noble experiment" of trying to control inflation by every means except the one which could have controlled it. We already have inflation of wages and therefore of labor costs. The cost, and therefore the price, of every other thing must eventually be inflated. Inflation never bothers most people very much during the inflating period. It is when the bubble is pricked that things happen. And how are we going to prevent the bubble being pricked in the post-war period? Obviously, we can't. A wise government would have prevented the bubble getting too big. And a wise government would now be trying to prepare its people for the shock when it bursts (the bubble, we hope, not the government).

However, we can't pin all the blame on the federal government. What have industrial leaders actually done to head off inflation? How are they preparing to meet the bursting of the bubble? They all know it will burst. While Washington politicians are talking of lowering tariff barriers and freeing international trade of various restraints, they are themselves setting up in this country the greatest barrier of all to American international trade, the most positive assurance of economic isolationism; which is our tremendously high labor cost. A very sad commentary on industrial leadership, or the lack of it, is the War Labor Board's decision in the case of the American Smelting and Refining Co., decided January 5, when the public's members were outvoted by both industry and labor representatives into giving a wage increase contrary to the W.L.B.'s own policy formula.

Our living standard can be maintained only by greater relative productivity of American industry,

and if we are to have this it must be with the understanding partnership of capital, management and labor—not to mention statesmen, of whom we have deplorably few at the present moment. As we look to leaders of enterprise for a solution of problems of industry, may we also look to them as leaders in statesmanship, both at home and abroad.

It is probable that Americans will become acquainted with, and known in (and we hope well liked), various undeveloped parts of the world, so that as individuals they will have parts to play in bringing sanitation, civilization and industry there. But, even there, it is quite possible that our erstwhile allies will be jealous and unwilling to share, what they probably will regard as theirs by right of conquest.

#### Post-War Problems for All

It is hard for most of us to consider the post-war problems of the world as of much concern to us at home, and it must be confessed that we have done considerable "interpreting" of our correspondents' thoughts to arrive at the foregoing paragraphs. There is an undertone of isolationism in some of the comments—about "our being Santa Claus to the rest of the world," etc. We doubt that isolationism is tenable; we believe the thought arises from a fear that we Americans will not be business-like enough in our foreign relations, both now and after the war, to see that our power as a nation is used to prevent our being made suckers. It is there that business men, both individually and collectively, can render genuine public service.

One Middle West crushed stone producer offers a novel suggestion that is interesting because it is constructive. He suggests that perhaps some of our large aggregates and ready-mixed operators can move their equipment and part of their executive organizations, temporarily, to those devastated cities of Europe, which will have to be rehabilitated in a hurry, if the people living there are to have any hope of rehabilitating themselves. In other words, here is a practical way to show that Americans can be as constructive in peace as we will have proved ourselves destructive in war.

Specific suggestions are so rare that any and all should receive consideration. There is, we understand, a committee of American business men working quietly on an economic program for the post-war period. It should be the business of all organized groups in industry to find out more about what this committee proposes; and if its plans are sound, these groups should get to work to help promote them. Organized British business men are already planning definitely how to rebuild their world trade. How long would our merchant marine be able to compete with its present union labor domination and high wages? This is only one of many questions that must be answered; and our present administration shows no inclination even to ask the questions, let alone attempt to answer them.

*Nathan C. Rockwood*



## From Mining to Rubber

DR. B. J. OAKES of Minnesota Mining & Manufacturing Co., St. Paul, Minn., has been chosen executive vice-president and general manager of the



Dr. B. J. Oakes

National Synthetic Rubber Corp. W. W. BENNER of Lee Rubber & Tire Corp., Conshohocken, Penn., has been named president of the corporation. WILLIAM M. COLLINS, JR., also of Minnesota Mining & Manufacturing Co., will be vice-president and treasurer and B. J. MOFFATT of Hewitt Rubber Corp., Buffalo, N. Y., will be vice-president. E. H. LETCHWORTH of a Buffalo law firm will serve as secretary of the corporation. Directors of National Synthetic will be ALBERT A. GARTHWAITE of Lee Rubber & Tire Corp., chairman of the board; THOMAS ROBINS, JR., of Hewitt Rubber Corp., vice-chairman; and W. L. MCKNIGHT, WILLIAM M. COLLINS, JR., and JOHN L. CONNOLLY of Minnesota Mining & Manufacturing Co.; W. W. BENNER and HENRY HOPKINS, JR., of Lee Rubber & Tire Corp.; B. T. MOFFATT of Hewitt Rubber Corp.; HENRY N. YOUNG, JR., and A. BOYD CORNELL of Hamilton Rubber Manufacturing Co. and F. B. WILLIAMSON, JR., of Goodall Rubber, Inc.

The National Synthetic Rubber Corp. is owned by the five rubber companies mentioned above and has been formed for the purpose of operating the new government-owned synthetic rubber plant to be built in Kentucky by the Defense Plant Corp., a subsidiary of Reconstruction Finance Corp. The plant's output will be made generally available and allocated by the Government, together with the products of other government-owned synthetic rubber plants.

## Huron Promotion

PAUL H. TOWNSEND, general manager of the Huron Portland Cement Co., Detroit, Mich., has been appointed vice-president and general manager, with general supervision over manufacturing, sales and accounting. After serving as Captain in the Field Artillery with the A.E.F. during the first World War, Mr. Townsend joined the Huron organization in 1919, as superintendent of plants. In 1940 he was appointed general manager. His new appointment as vice-president and general manager also includes the cement company's subsidiary, the Huron Transportation Co., operating a fleet of bulk-cement lake vessels.

## Assistant Superintendent

GLENN W. STANCLIFF, chief engineer of the Waco, Texas, plant of the Universal Atlas Cement Co., New York, N. Y., has been appointed assistant superintendent of the Leeds, Ala., plant. Mr. Stancliff is a graduate of the University of Kansas, where he majored in industrial engineering. He has been associated with the company since 1919.

## Teaching Chemistry

FRITZ J. HANSRIG, who developed the process for the production of magnesium carrying his name and used by Permanente Metals Corp. on the West Coast, has been released from internment and is now teaching chemistry in a college at Black Mountain, N. C.

## Kiwanis President

GEORGE MATTISON, JR., president of the Woodstock Slag Corp., Birmingham, Ala., has been elected president of the Birmingham Kiwanis Club.

## To Research Staff

ADRIAN G. ALLISON, former ceramic engineer of the Electro Refractories and Alloys Corp., Buffalo, N. Y., has been appointed to the research staff of Battelle Memorial Institute, Columbus, Ohio, and assigned to its division of ceramic research. Mr. Allison, who holds Bachelor of Ceramic Engineering and Master of Science degrees from Ohio State University, will be engaged in a program of research in the development of new manufacturing methods for the ceramic industry.

## New Treasurer

ROGER HACKNEY, assistant treasurer, Johns-Manville Corp., New York, N. Y., has been made treasurer of the company. In his new office, Mr. Hackney will continue to serve on the staff of R. W. Lea, vice-president in charge of finance.

## In Charge of Sales

JOHN P. COURTRIGHT, director of sales of the Marion Steam Shovel Co., Marion, Ohio, has been elected vice-president in charge of sales. Mr. Courtright joined the company as a salesman in the Chicago district territory in 1927. In 1936 he was made district manager of the same territory and a year later he was made sales manager over all districts.



John P. Courtright

ROCK PRODUCTS

### Talks on Pipe

M. W. LOVING, secretary and treasurer of the American Concrete Pipe Association, Chicago, Ill., for over 20 years, recently gave an illustrated talk at the Western Society of Engineers, explaining where and how concrete pipe is being used. His talk also covered the hydraulic design of concrete pipe lines and the proper methods of laying concrete pipe including tunnelling, jacking and field procedure. Mr. Loving is a graduate of Virginia Polytechnic Institute. He has worked for the Baltimore Sewerage Commission, Universal Cement Co., and the Portland Cement Association. Mr. Loving is also secretary of Committee C-13 on Concrete Pipe, American Society for Testing Materials.

### Joins W.P.B.

A. C. MELTING has resigned as mill foreman with the U. S. Gypsum Co. and has accepted a position as regional technical advisor, mining branch, field service, W.P.B., in Salt Lake City.

### Heads Company

OSCAR H. JOHNSON has been elected president of the Mine and Smelter Supply Co., replacing Albert E. Seep who has gone into the military service. Mr. Johnson was formerly vice-president of the company and general manager of the Marcy Mill division.

### Secretary Masonry Association

E. W. DIENHART, assistant manager of the Concrete Products Division of the Portland Cement Association, Chicago, Ill., has been appointed executive secretary of the National Concrete Masonry Association, according to an announcement by John L. Strandberg, president of the Association. Mr. Dienhart is well known to the concrete products industry, having devoted the past 24 years to promotion and research activities in various capacities. Most of his business career has been in the service of the Portland Cement Association.

### With War Board

C. WILL WRIGHT, Board of Economic Warfare, in an illustrated after-dinner talk, gave much information on the occurrence and exploitation of industrial minerals in South America. Among the rock products minerals operations discussed were mica, asbestos and quartz crystals which are all on the critical list.

Work is now under way to increase the production of these minerals and others which are vitally needed. J. T. Singewald, Jr., Johns Hopkins University, and Paul M. Tyler, Board of Economic Warfare, supplemented his remarks with additional data.

### Production Manager

KENNETH R. ECKROTE has been made production manager for the United States Gypsum Co. in Chicago.

### With Magnesium Co.

THOMAS P. TURCHAN has been promoted to metals plant superintendent for Basic Magnesium, Inc., at Las Vegas, Nev.

### Elected Vice-President

A. R. ABELT, secretary of the Chain Belt Co., Milwaukee, Wis., has been elected a director of the company to replace F. J. Weschler of the Baldwin-Duckworth Division who died recently. In addition to being made a director, Mr. Abelt was also elected a vice-president. He joined the Chain Belt organization in 1907 as a very young man and literally grew up with the company. He has served in many capacities which have included production, sales and executive work. In 1922 Mr. Abelt was made sales manager of the Chain Belt and Transmission Division, a position he retained until early in 1942 when he became manager of that division. He has been secretary of the company since 1930.



A. R. Abelt

### Heads Memphis Companies

L. T. McCOURT has been elected president of the Fischer Lime and Cement Co., Memphis, Tenn., and its



L. T. McCourt

subsidiaries, the Concrete Products Corp., Greenville Sand and Gravel Co., and Hollywood Sand and Gravel Co. W. N. Fry, Jr., and W. S. Walters were named vice-presidents, and E. Hatfield, secretary-treasurer, of the first three companies. N. A. Dye was made vice-president, and W. L. Hackney, secretary-treasurer, of the Hollywood Sand and Gravel Co.

Mr. McCourt was born December 29, 1886, at Fort Dodge, Iowa. His father was a railroad man and therefore during his early life he lived in Iowa, Illinois and Tennessee. He graduated from high school in Memphis, Tenn., in 1906. He became associated with the Greenville Stone and Gravel Co. as timekeeper in 1914 during the construction of the Williford Crushed Stone Co. at Williford, Ark.

In 1915 he was transferred to Memphis as bookkeeper and in 1920 was made secretary and treasurer. In 1923, Mr. McCourt assumed the additional duties of secretary and treasurer of the Central Sand & Gravel Co. and two years later was made secretary and treasurer of the Camden Gravel Co., all controlled by the W. W. Fischer interests. During the depression years following 1929 the three companies were all liquidated. In 1940 Mr. McCourt was made vice-president of the Concrete Products Corp. which had just been organized,

also vice-president of the Greenville Sand & Gravel Co., Greenville, Miss., and the Batesville White Lime Co., Batesville, Ark. During the early part of 1942 he was elected president of the Hollywood Sand & Gravel Co. and then president of the Fischer Lime & Cement Co., the Greenville Sand & Gravel Co. and the Concrete Products Corp., succeeding the late W. W. Fischer.

### Truck Mixer Committee

THE W.P.B. has announced the formation of the following new industry advisory committee for truck mixer-agitator manufacturers: T. H. Fleming, Concrete Transport Mixer Co., St. Louis, Mo.; B. F. Devine, Chain Belt Co., Milwaukee, Wis.; Lion Gardiner, vice-president, Jaeger Machine Co., Columbus, Ohio; Robert T. Harris, Blaw-Knox Co., Pittsburgh, Penn.; Walter Muller, Ransome Machinery Co., Dunellen, N. J.; H. C. Peters, The T. L. Smith Co., Milwaukee, Wis.

### Stone Representative

GLENN E. LEEMON has been appointed a representative of the Stockbridge Stone Co., Stockbridge, Ga.

### To Oregon State

ALBERT W. SCHLECHTEN, formerly on the faculty in the department of metallurgy at the University of Minnesota, has been selected to head the department of mining engineering at Oregon State College, which is being re-established after a ten-year period of inactivity. Increased activity in the State's mining industry is the principal reason for again offering instruction in mining and metallurgy. Mr. Schlechten is a graduate of the Montana School of Mines and of M.I.T. He was at one time employed in the research department of the Anaconda Copper Mining Co.

### New N.I.A.A. Officers

HERB V. MACREADY, sales promotion manager of Magnus Chemical Co., is the newly-elected president of the National Industrial Advertisers Association. Vice-presidents are Allen P. Colby, advertising manager, National Supply Co.; F. L. Lackens, advertising manager, The Hays Corp.; Wilmer H. Cordes, advertising manager, American Steel and Wire Co.; A. H. Neher, sales promotion manager, Century Electric Co.; Harry Keene, advertising manager, Grinnell Co.; Robt. J. Barbour, assistant advertising manager, Bakelite Corporation;

J. A. M. Galilee, assistant advertising manager, Canadian Westinghouse, Ltd.; and H. S. Schuler, sales promotion manager, Westinghouse Electric and Manufacturing Co. The new secretary-treasurer is Arnold J. Andrews, Bucyrus-Erie Co.

### Heads Link-Belt

WILLIAM C. CARTER, for fourteen years vice-president and for the past year executive vice-president of Link-Belt Co., Chicago, Ill., has been elected president of the company, to succeed Alfred Kauffmann, who has resigned because of ill health. Mr. Carter, a mechanical engineering graduate of the University of Illinois, joined the Link-Belt organization in 1902 as a draftsman. He has consecutively held the positions of engineering depart-



William C. Carter

ment supervisor, construction superintendent, plant superintendent, plant general manager, vice-president in charge of production. He has been executive vice-president in complete charge of company affairs since Mr. Kauffmann's illness. Mr. Kauffmann, who has so ably served the company for 41 years, rising from draftsman in 1901 to president in 1924, is retiring from active service in order to recover his health. He remains a member of the board of directors.

### New P.C.A. Officers

FRANCIS G. MCKELVY, president of Alpha Portland Cement Co., Easton, Penn., has been elected chairman of the board of directors of the Portland Cement Association, succeeding Walter A. Wecker, president of the Marquette Cement Manufacturing Co., Chicago, Ill., who has filled this posi-

tion for the past two years. Mr. McKelvy was born in Pittsburgh, Penn., and received his early education at Shady Side Academy in that city, and at Lawrenceville Academy in New Jersey. He graduated from Princeton University in 1904 with the degree of Bachelor of Arts. He became associated with the Alpha Portland Cement Co. in 1906, when he obtained a clerical position. In 1907 he was advanced to the position of assistant secretary, and he became purchasing agent in 1908, holding that post for three years. In 1911 he was elected to the position of secretary and after three years was advanced to the office of vice-president, holding that position for 17 years. In 1934 he was made executive vice-president and a year later was elected to the presidency, which position he has held since that time.

### Chamber of Commerce Officers

MERRILL E. PRATT, president of the Continental Gln Co., Birmingham, Ala., has been elected a member of the board of directors of the Birmingham Chamber of Commerce, and C. E. Ireland, president of the Birmingham Slag Co., Birmingham Ala., and J. W. Porter, president of the Alabama By-Products Corp., were re-elected to the board.

### Made Assistant Manager

EDWIN FORREST BIGGS has been appointed assistant general manager of the Roquemore Gravel and Slag Co. and the Montgomery Gravel Co., both of Montgomery, Ala., subsidiaries of the Birmingham Slag Co. Mr. Biggs has had wide experience in the stone industry and also with the United States Engineers and the Tennessee Valley Authority. From 1925 to 1926 he was a draftsman for the Ohio Cut Stone Co. In January of 1926 he entered the employ of the Briar Hill Stone Co. as a draftsman. He resigned in 1932 to accept a position as general manager of the Glenridge Stone Co., a newly-formed competitor of the Briar Hill Stone Co. Control of this company was purchased by the Briar Hill company in the fall of 1934. Mr. Biggs then started with the War Department on the Muskingum Projects in the spring of 1935. In November of 1936 he transferred to the Tennessee Valley Authority as an assistant structural engineer. The following year Mr. Biggs was advanced to the position of production engineer

for the Guntersville Project and later in that same year, when the design work of Guntersville and Chickamauga was combined, he was made assistant project design engineer and production engineer. From 1937 to his appointment as assistant general manager of the Roquemore Gravel and Slag Co., and the Montgomery Gravel Co., he held positions as construction superintendent on various Government projects. At one time he was assistant to G. K. Leonard, project manager for the Hiwassee projects construction division.

### Universal Atlas Changes

UNIVERSAL ATLAS CEMENT CO., New York City, announces retirements and promotions of personnel at the Buffington, Ind., and Duluth, Minn., plants as follows (effective January 1, 1943):

#### Buffington, Ind., Plant

J. H. KEMPSTER, general superintendent, is retiring after more than 35 years of service with the company. J. B. LEWIS, assistant general superintendent, is appointed plant manager. A. E. FREUDENREICH, general operating foreman, is appointed assistant plant manager.

Mr. KEMPSTER attended Michigan State Normal College, Ypsilanti, Mich., and graduated from the University of Michigan with a B.A. degree in chemistry and physics. He entered the employ of the company as a chemist in 1907, became chief chemist in 1908, superintendent of Mills Nos. 3 and 4 in 1915, superintendent of Mill No. 6 in 1918, and general superintendent of the Buffington plant in 1923, which position he has held to date.

Mr. LEWIS majored in engineering at Allegheny College, Meadville, Penn., and also studied drafting, civil engineering and chemical analysis. He began work with the cement company as a tester in the laboratory at the Universal, Penn., plant in 1907, transferred to the Buffington plant as an inspector in 1911, was appointed superintendent of Mills 3, 4 and 6 in 1918, and in 1928 became assistant general superintendent, Buffington plant, which position he has held until his appointment as plant manager, January 1.

Mr. FREUDENREICH is a graduate in electrical engineering of Rose Polytechnic Institute, Terre Haute, Ind. He joined the cement company in 1910 in the engineering department, was made superintendent of construction at the Buffington plant in 1922,

became assistant superintendent in 1923, and later superintendent of Mill No. 6. He subsequently became general operating foreman of the Buffington plant, which position he has held until his appointment on January 1 as assistant plant manager.

#### Duluth, Minn., Plant

R. S. HUEY, superintendent, is retiring after 40 years of service. E. J. AMAN, local auditor, is retiring after 48 years of service. FRED ROBINSON, assistant superintendent, is appointed plant manager. MARTIN E. LINQUIST, operating foreman, is appointed assistant plant manager. FREDRICK N. FREDRICKSEN, chief clerk, is appointed local auditor.

Mr. HUEY is a graduate in electrical engineering of Illinois (formerly Armour) Institute of Technology, Chicago. In 1903 he entered the service of the Illinois Steel Co., transferred in 1906 to the Buffington plant of the Universal Atlas Cement Co., became assistant to the assistant superintendent of Mill No. 3 in 1908, and assistant general superintendent of Buffington plant in 1914. In 1915 he became superintendent of the Duluth plant which position he has held to date.

Mr. AMAN joined the Illinois Steel Co. in 1894, transferred to the cement company at its Buffington plant in 1904, went to the Duluth plant in 1913, became chief clerk in 1914 and was appointed local auditor in 1916 which position he has held until his retirement.

Mr. ROBINSON was born in Sweden, studied civil engineering, entered the service of the Illinois Steel Co. in 1905, and later went to the Buffington plant of the cement company on construction work of Mills No. 4 and No. 6. In 1913 he was engineer of construction at the Duluth plant, and in 1915 was appointed assistant superintendent, which position he has held until his appointment as plant manager, January 1.

Mr. LINQUIST began work as a clerk in the machine shop of the Buffington plant in 1909, was made employment and safety inspector at the Duluth plant in 1917, and subsequently became operating foreman, which position he has held until his appointment on January 1 as assistant plant manager.

Mr. FREDRICKSEN began work at the Duluth plant as a timekeeper in 1916, became local cashier in 1919, and chief clerk in 1939, which position he has held until his appointment as local auditor on January 1.

### Change in Management

WM. BREEN GRAVEL CO., Grand Rapids, Mich., announces the retirement from active participation of Wm. Breen, its president. Mr. Breen is 82 years old and was one of the earliest large scale sand and gravel producers in the state, having been in the business for over 30 years. C. D. Wasmuth, secretary of the company, has taken over the active management.

### Lime Advisory Committee

APPOINTMENTS to the Lime Industry Advisory Committee made by the War Production Board are as follows: Reed C. Bye, vice-president, Warner Co., Philadelphia, Penn.; Ralph L. Dickey, president, Kelley Island Lime & Transport Co., Cleveland, Ohio; John R. Durrell, president, Hoosac Valley Lime Co., Inc., Adams, Mass.; Eric Johnston of Washington, D. C., president, Washington Brick & Lime Co., Spokane, Wash.; Warren Lewis, vice-president, Longview-Saginaw Lime Works, Birmingham, Ala.; H. B. Mathews, Jr., president, Mississippi Lime Co., Alton, Ill.; Bernard L. McNulty, president, Marblehead Lime Co., Chicago, Ill.; Amos B. Miner, sales manager, National Gypsum Co., Buffalo, N. Y.; W. W. Sprague, vice-president, National Mortar & Supply Co., Pittsburgh, Penn.; and E. I. Williams, president, Riverton Lime & Stone Co., Inc., Riverton, Va.

### In the Army

HENRY CROWN, chairman of the board, Material Service Corporation, Chicago, Ill., will join the Army at Los Angeles, Calif., as a lieutenant colonel of engineers. His son Robert, a former employee of the company, is an ensign with the Navy.

### Becomes General Manager

G. D. GILBERT, sales manager of the Baldwin-Duckworth Division of the Chain Belt Co., which is located at Springfield, Mass., has been made general manager of that division and also elected secretary of the company to succeed Mr. Abelt. Mr. Gilbert entered the employ of the Duckworth Chain and Manufacturing Co. in 1918. He was made sales manager of that company in 1924 and was successively sales manager of the Baldwin-Duckworth Chain Corp. and the Baldwin-Duckworth Division of Chain Belt Co. created by a merger of Baldwin-Duckworth and Chain Belt in 1939. He is also a director of Chain Belt Co.

# HINTS AND HELPS

## Worn Mill Gear Built Up By Welding

By P. G. CHAMBERLAIN  
Dewey Portland Cement Co.

IN LINE with the material conservation program so common today, perhaps the industry will be interested in one of the things of this



In front of the special milling machine used to mill teeth of gear built up by welding may be seen Frank Wright, chief welder, left, and J. I. Massey, foreman

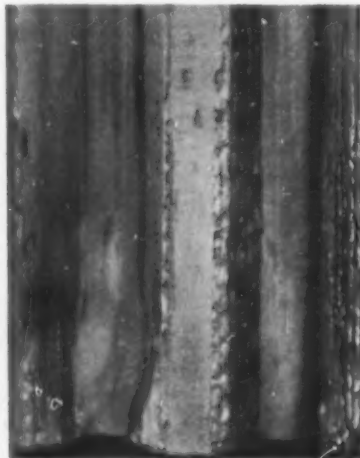
nature which was recently done at the Davenport, Iowa plant of the Dewey Portland Cement Co.

In one of the illustrations is shown a ring gear from a 7- x 26-ft. compeb mill. This gear is 14 ft. in diameter and 16 in. wide, and has a pitch of  $3\frac{1}{2}$  in. After this gear was too badly worn to run properly, it was set up in a vertical position in

the shop where the teeth were built up with No. 7 Fleetweld welding rod, the welder using 22 beads on each tooth. Almost 1000 lb. of rod was used.

The job was then laid flat on the shop floor where it was milled with a portable milling machine which was built in the company's shop.

Another illustration shows a close up of the teeth. The tooth to the left



Showing how worn compeb mill gear was built up by welding. Tooth to the left has been partly milled; the other tooth has not been milled

has been partly milled and the one to the right shows a built up but unmilled tooth.

It has been figured that the repair job cost about 40% of a new gear, and it is believed the repaired gear will last as long as a new one.

## "A Burner Speaks"

By NOBLE R. HILL

IN A CEMENT PLANT the kiln burner is beyond a doubt the key man of

the entire plant. This will hold true more so at a waste heat plant than a plant which uses natural draft.

The plant centers around the kiln department at a waste heat plant as the powerhouse looks for heat to operate the waste heat boilers. The chemist looks for quality clinker. The stockholder looks for production at the lowest cost. Yes, they all lean heavily upon the burner. They know the reputation of the product depends upon the burner's ability to burn a quality clinker.

His responsibilities are great, but all he wants is understanding and cooperation. As a rule a kiln burner is proud of his ability. He works hard to create a reputation and then strives to hold it regardless of conditions. I have yet to find one burner who would purposely damage a kiln or run overburned or underburned clinkers. But, I have operated kilns at different times at waste heat plants where they place the burner in the same class as a fireman. Under these handicap conditions your burning knowledge is wasted. What you need is a fireman's license.

For example, I was hired as a burner at a waste heat plant a few years ago. On reporting for work the superintendent made no mention of burning a good clinker, but stated the burners were having difficulty in keeping the rear end kiln temperature up high enough to enable the powerhouse to run the entire plant at one time. As it was they would run the raw end for eight hours then the following eight, the finish end. As a result the cement silos were nearly empty. He said he believed the trouble lay in the waste heat boilers. The powerhouse men blamed the burners, and, in turn, the burners blamed the powerhouse. In other words, it was a case of "passing the buck," but doing nothing to clear up the trouble.

On entering the kiln room I noticed smoke and sparks escaping from around No. 2 kiln hood. Gas fumes filled the air. The heat pyrometer registered 1200 deg. F. at the rear end of No. 2 kiln. No. 1 kiln showed 1600 deg. F. This kiln was in good condition. The rear end draft fans were independent of one another. I found them both running at top speed. An inspection proved No. 2 kiln to be free of mud rings. The night burner informed me that the choked condition in No. 2 kiln had prevailed for the past two weeks,



Building up worn teeth on compeb mill by welding

steadily growing worse. The raw feed was crowding the nose ring at all times. The front end heat was terrific. Calling the superintendent, I advised him to shut the kiln down, pointing out the danger in trying to operate a kiln in this condition. He said, "No, keep her going. They needed the power badly to run the finish mills."

I managed to nurse the kiln through that day. The following night, due to the intense heat, the nose ring bricks fell out. The kiln was down for two days, not only for replacing the nose ring bricks, but also they found it necessary to re-line 20 ft. in the burning zone.

After starting the kiln again we found the same condition as before. Within two weeks the kiln was down again for relining, the blame being placed upon the burners. The superintendent and mill foreman, not having any knowledge of burning a cement kiln, could not see our point of view. But finally the trouble was found in the boiler room; the blades on the draft fan had become pitted and worn full of holes resulting in cutting the draft down. In this case, better cooperation and team work from all concerned would have saved the company several hundred dollars in brick and labor. It's to every employee's interest from the manager down to the laborer to remember that successful plant operation and good working conditions can only be possible when we, one and all, make up our minds to quit "passing the buck." We can make our plant a good place in which to work or vice versa, the decision resting with us. I say, for one, "let's cooperate."

### Safety Campaign Brings Results

By J. I. GORMAN

Pres., The Zanesville Gravel Co.,  
Dresden, Ohio

THERE is a well used motto of our Ohio Industrial Commission "Safety Saves Sorrow." It was suggested by a local undertaker, who had a keen sense of understanding of what the loss or crippling of a worker meant to his immediate family.

The practice of "Safety" daily and hourly by the workers at plants today is the most vital element in our production. The reasons are all too apparent to be even mentioned. Incentives to the practice of Safety keep the idea alive in the minds of the workers.

We employ about 25 men at each of our plants. At the end of each oper-

### PRIZE WINNING HINTS AND HELPS

IN THE OCTOBER issue of ROCK PRODUCTS the editors offered Prizes aggregating \$300 in War Bonds and Stamps for short, snappy "Hints and Helps" on any subject of plant operation or maintenance, including management and personnel problems—any subject made live by war conditions.

The point the editors wished to emphasize was that winning the war requires Ingenuity, Resourcefulness and Conservation, on the part of all engaged in industry. The result was very gratifying and herewith we present some of the entries and the list of prize winners.

The editor in making these awards had the benefit of the choices of three very competent judges: Bernard L. McNulty, president, Marblehead Lime Co.; George W. Renwick, vice-president, Chicago Gravel Co.; Paul C. Van Zandt, consulting engineer, Universal Atlas Cement Co.

Naturally, since the subjects are quite diversified, the first choice of each judge was different, but by a system of scoring which seemed fair to all the judges, the following winners were selected:

FIRST (\$100 bond), J. Q. TAYLOR; SECOND (\$50 bond), V. E. WESSELS; THIRD (\$50 bond), NOBLE R. HILL; FOURTH (\$25 bond), J. H. REICHENBACH; FIFTH (\$25 bond), J. J. BYERS; FIVE PRIZES (of \$10 bond each), J. J. GORMAN, NELSON SEVERINGHAUS, J. H. REICHENBACH (Hardening Hammers for Unit Coal Mills), ROBT. A. HARKER, T. R. FREYHOF (Elimination of Stock Pile Segregation).

The titles of the "hints" are given in the case of two authors who submitted more than one entry and won more than one prize.

The other authors will receive compensation at space rates. We remind all readers that our columns are open for similar articles all the time at payment of \$5 each, or more in case the articles and illustrations take more than one column.

ating month, when we have not had a lost time accident, we have a drawing contest with a \$25 prize in cash for the lucky man who wins. No man is permitted to win more than two prizes during the current year and no man can win twice during a six months period. At the end of each three months period, provided we have had no lost time accidents during this period, we give each man some remembrance such as pocket knives, or a clothes brush for the home or some other gadget marked "Safety Award, The Zanesville Gravel Company." This plan was brought to us by The Shaw Barton Co., advertising specialists. We later changed this plan slightly at the request of the men so that we have a \$15 prize and a \$10 prize at each drawing.

We had a 100% Accident Prevention for the year 1941, and the Award is on the walls of our offices. This award was given us by our Ohio Industrial Commission as the result of a NO ACCIDENT contest which was conducted under their supervision.

### Uniform Feeding of Kilns

By J. H. REICHENBACH

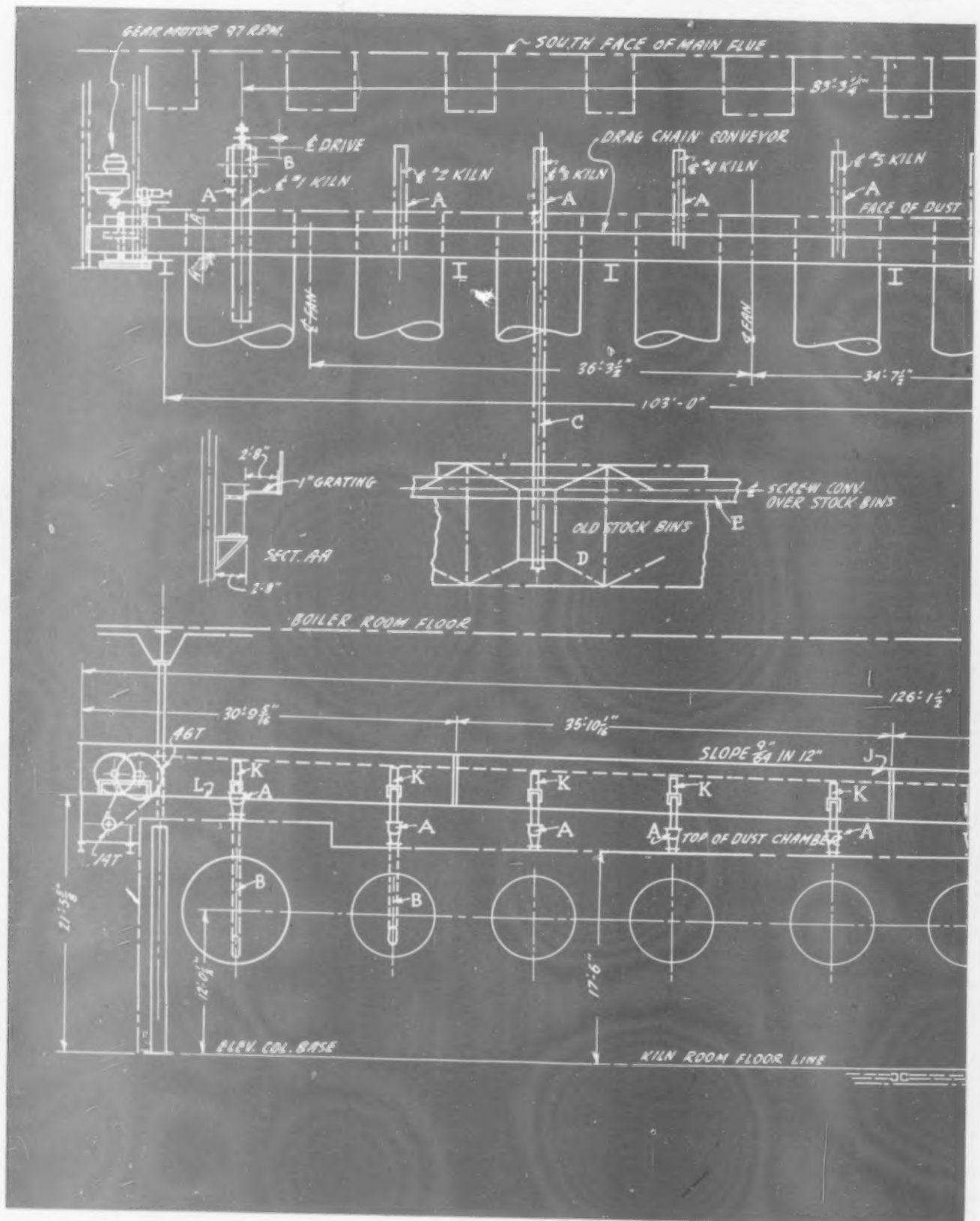
Mfg. Research Engr.,  
Nazareth Cement Co.

A RECENT IMPROVEMENT in the method of feeding our kilns is being submitted for consideration. The installation was made principally to eliminate starving and flooding of raw material into the kilns.

Details of the new system are shown in the accompanying illustration. Conveyors C and E, and stock bin D were drawn in for No. 3 kiln only to show the old arrangement for feeding. The raw material was pumped to conveyor E which distributed it across the bins. Conveyor C was fed by gravity from the stock bin D. It conveyed the material a distance of about 60 ft. to the feed pipe B. Light feed in the kilns, a frequent complaint of the burners, resulted from arching in the old stock bins D and an unequal distribution of material by screw conveyor E. This was evidenced by a shorter refractory life in kilns No. 1, No. 2 and No. 3 which were farther from the feed to the screw E. The hot flue dust was mixed with the raw material as the raw material entered the distributing screw E.

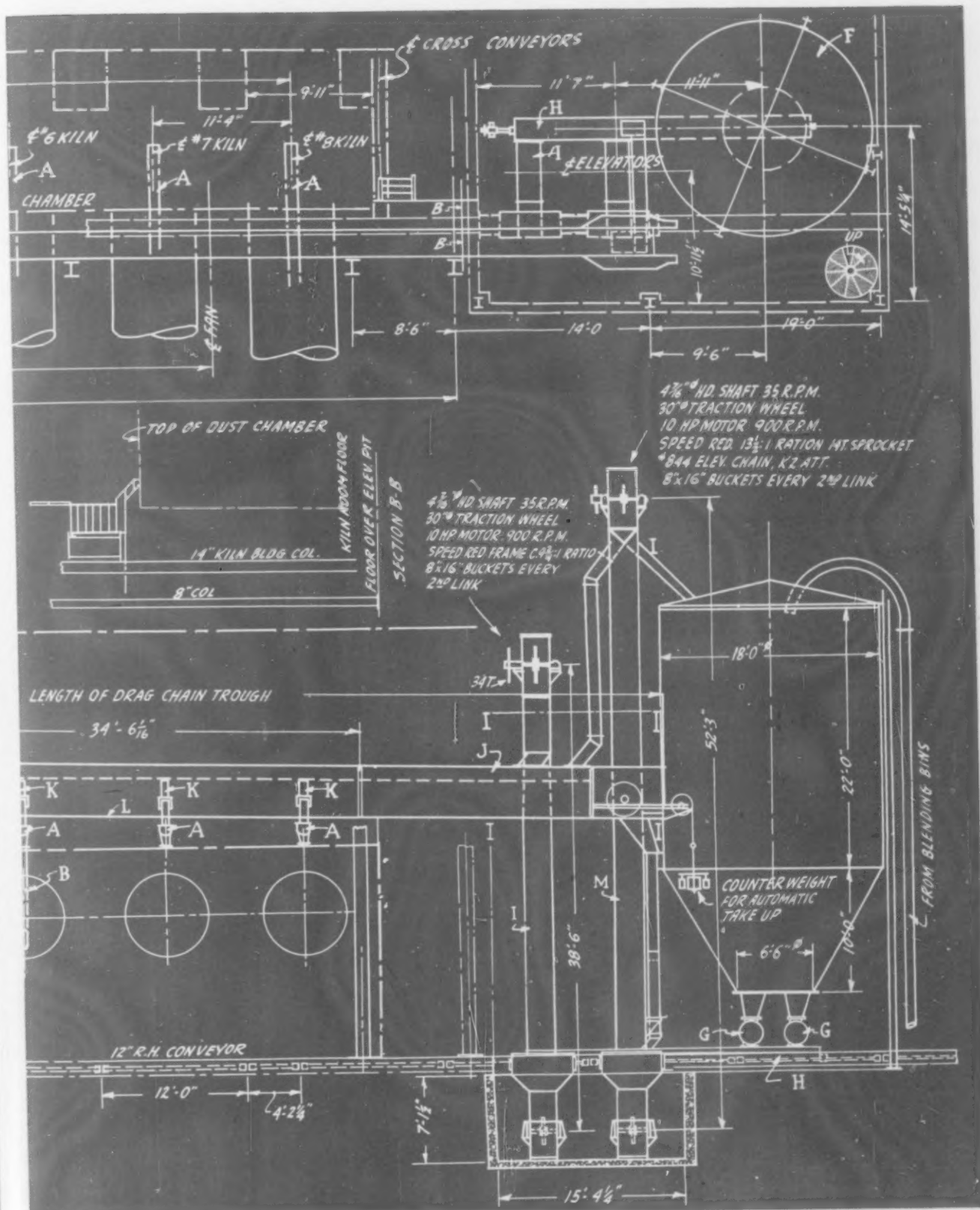
Under the present system the raw material is pumped from blending bins to a large tank F. It is fed from the tank by one or two feeders G to

(See next three pages)



Plan and elevation of kiln room showing improved method

ROCK PRODUCTS



of feeding raw materials to eliminate starving and flooding

JANUARY, 1943

a screw conveyor *H* which discharges it into the 38-ft. 6-in. elevator *I*. This elevator dumps the material on the upper deck of a two-way drag chain *J* running across the kilns. The raw material drops by gravity through short spouts *K* to the screw conveyors *A*. These conveyors, one section of the old 40-ft. conveyors *C*, and the feed spouts *B* are the remaining parts of the old system. An amount of raw material is fed to the drag chain to keep conveyors *A* filled and provide an excess which drops on to the lower deck *L* of the conveyor. This excess is returned to the 52-ft. 3-in. elevator *M* and there mixed with the hot flue dust. This mixture is elevated and spouted either into tank *F* or onto the upper deck of drag chain *J*.

After a short period of operation several advantages have been indicated. The raw material is more thoroughly mixed and uniformly distributed. Longer refractory life is apparent on kilns heretofore requiring excessive linings. The burner now has more positive control of his feed thus improving the efficiency of kiln operation.

## Reducing Errors in Moisture and Gravity Determinations

By STANLEY M. HANDS  
Testing Engineer, Oakland, Calif.

CONSIDERABLE possibility of error is likely in making moisture and gravity determinations due to fact that samples are small.

Here is an illustration of the "Bucket Pycnometer" as developed for use in batching plants by City of Oakland, Calif., laboratory staff. It is made more effective by the use of charts showing the relationship between moistures or gravities and the difference in the weight of the sample in air and in water. Most technicians could figure out the mathematics for making up the charts.

A chart showing the pycnometer relations to the saturated-surface, dry weight of the ingredients in a batch also was prepared.

The relationship between maximum size of aggregate and the total water for the mix is based upon dense graded skip-type gradings of the materials available around Oakland. The water demand is based upon concrete wetted to the plastic limit but not into the liquid limit. This results in a 2½-in. slump for some of the sands available here and



Bucket pycnometer used in making moisture and gravity determinations in aggregate batching plants

about 2-in. slump for concrete made from sand from other sources.

The entire system is based upon the use of absolute units for setting up the mix for yield and upon translation to scale weights by reference to the specific gravity.

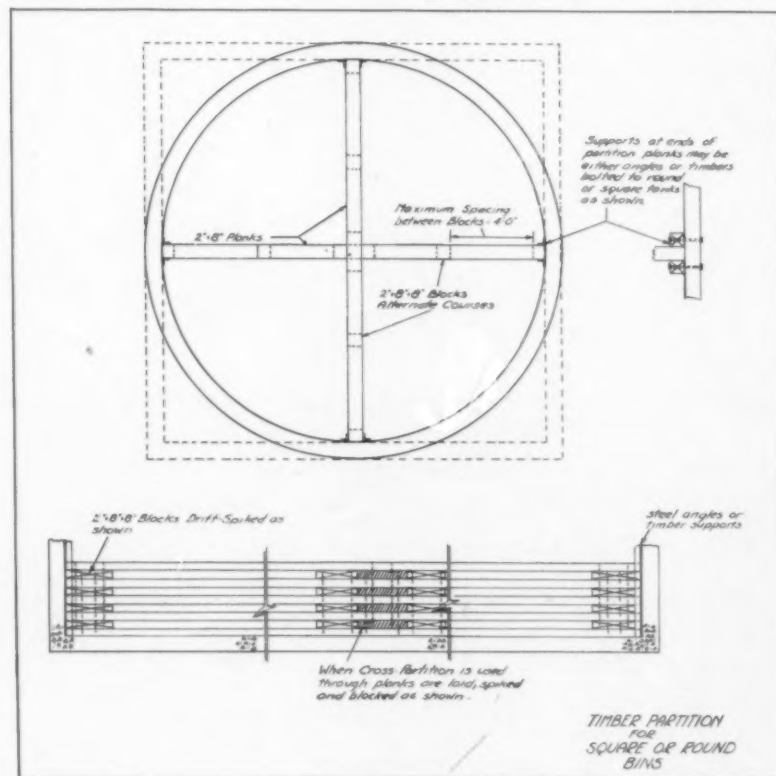
## Bin Partitions

By T. R. FREYHOF  
Metropolitan Sand & Gravel Co.,  
Port Washington, N. Y.

A VERY SUBSTANTIAL PARTITION can be installed in any bin by the use of 2- x 8-in. boards. These boards should be the length of the desired partition. By using spacer blocks about 8 in. long cut from the same 2- x 8-in. boards, in place of every other board, the amount of lumber is thereby nearly cut in half. These 8-in. short blocks may be from 4- to 6 ft. apart. The air space between each board eliminates rapid decay. Oak lumber should be used.

This same partition works even better when a bin is to be partitioned into four parts. One board is placed to make the partition one way. Then the next board is placed on top of the first board and is placed in the opposite direction thereby making four sections. The space between the boards is then filled in with the same short boards cut 8 in. long and spaced 4- to 6 ft. apart.

The space between the boards should cause no concern since the height is only 2 in. while the width is 8 in., and no dry material will run on a 15 deg. angle.



Plan and cross section of strong bin partitions which economize on lumber

The ends of the partition can be held in place by bolting a timber or an angle on each side of the partition on each end of the bin to be partitioned.

No stiffeners of any kind are required for the center of this partition.

We have recently placed this partition in a circular bin 28 ft. in diameter and 26 ft high, cutting it into four parts, each holding 150 cu. yd. of sand and gravel. It is also being used in 18- x 18-ft. square bins, 30 ft. high, making two sections without a center brace.

## Replacing Flat Belts With V-Belts

By **ROBERT A. HARKER**  
Supt., Calrock Asphalt Co.

ILLUSTRATIONS show actual installations of V-belt replacement of flat belts at the Calrock Asphalt Co. plant near Santa Cruz, Calif.

Fig. 1 shows the installation of two "A" belts on the fan drive of a White truck model 45 with GRB engine. A flat belt was formerly used which was not satisfactory. The upper (driven) pulley is revamped by bending two 3/8-in. rods in a space sufficient for the two belts to ride between, and brazed in place. The lower pulley is untouched. This has proven an economy in belts and engine maintenance.

Fig. 2 shows a 5-hp. conveyor drive using four "B" belts installed on the old steel split pulley. The belt (conveyor) carries 45 tons per hour and is 18 in. wide.

Fig. 3 shows illustration of four "B" belts installed on a compressor drive using the old crowned flywheel without alteration, two belts on each side of the crown. The motor is 10 hp. and drives the compressor (Rix 6 x 6) at 200 r.p.m.

All the above mentioned "V"-drive installations have proven satisfactory, and in all cases improved the operation and increased the belt life on each job. A saving of about one-third was effected in the installations by eliminating the need of a "V" grooved driven wheel, and, of course, the constant saving on belts and loss of time through belt slippage and breakage and last, but not least, the saving of the critical metals, iron and steel.

## Hardening Hammers for Unit Coal Mills

By **J. H. REICHENBACH**  
Mfg. Research Engr.,  
Nazareth Cement Co.

A METHOD of treating plain soft steel hammers for use in our Strong-Scott Unipulvo coal mills has been devised by the Nazareth Cement Co. The mills are used for firing kilns and dryers.

The untreated hammers 1/2- x 3- x 9 1/2-in. cost 25c each. At an additional expenditure of 5 1/2c per hammer the life has been increased 60 percent. The cost per barrel of clinker is \$.0017, using treated hammers.

The method is to pack the hammers in a carburizing mixture, heat them for five (5) hours at 1700 deg. F. and quench in water.

The mixture contains 45 percent wood charcoal, 15 percent bone charcoal, 25 percent coke, 14 percent barium carbonate and one percent sodium carbonate. The charcoals sustain the carburizing action. Bone charcoal is more efficient and shrinks less than wood charcoal. Coke acts as a filler and reduces shrinkage. The carbonates, barium and sodium, are energizers, which increase the concentration of carbon monoxide. A 500-lb. batch is hand mixed, and stored in bags or barrels. This

amount can be used to treat about 40 sets, and it will last us 6 to 12 months.

Half-inch steel plate boxes and alloy steel boxes have been used successfully for this hardening process. The alloyed boxes, of course, have the longer life. Hammers are packed in rows and layers so each one is surrounded by about 1/2 in. of the mixture. Care must be taken to prevent overheating because of chemical attack on the boxes.

This method has proved more economical than cyaniding, welding with hard surface rods, or the use of tool steel and other alloyed steel hammers.

The average life of untreated hammers was 500 hours. Tool steel hammers gave us equivalent life at a greatly increased cost. Welded hard surface coatings yielded longer life, 600 hours, at slightly increased cost. The maximum life obtained by cyaniding was 624 hours at cost comparable to carburizing. By carburizing the life was increased to 800 hours.

## Belt Splice Hooks

By **J. I. BYERS**  
Supt., Van Buren Sand & Gravel Co.

A CHEAP, EFFECTIVE AND QUICK WAY of repairing conveyor belts has been devised by the Van Buren Sand & Gravel Co., Van Buren, Mo. I had a freight car set out for loading that had a number of pieces of No. 8 galvanized steel wire which the mechanic cut up into 5 1/2-in. lengths. I have a small vise just 2 3/4-in. face. He put the wires in the vise and bent the ends of the wire back on both sides. They would form a slight hook at the tip, making a belt hook that I have used in splicing 6-ply 24-in. conveyor belts. By using two hooks on each side turned in opposite directions, one pointing up and one down, and bending down, placing 1-in. apart

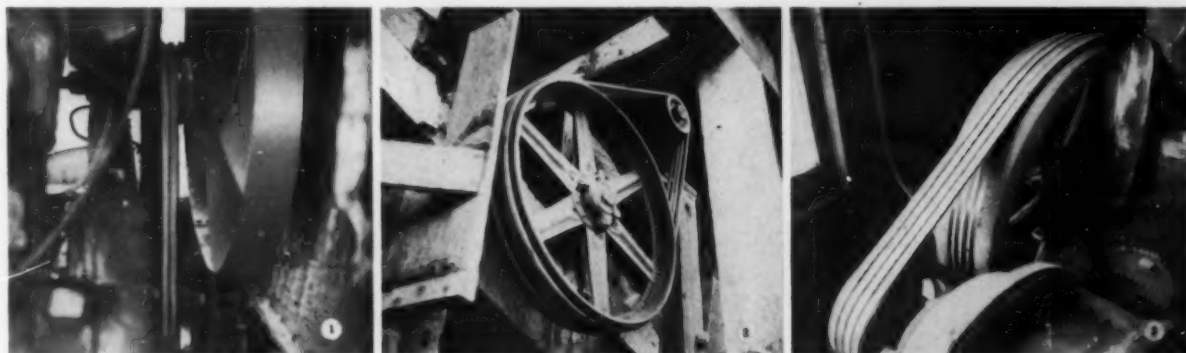
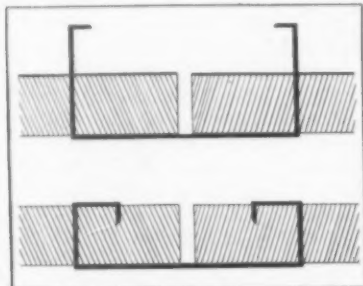


Fig. 1: Installation of two "A" belts on fan drive of truck. Fig. 2: Shows conveyor drive using four "B" belts installed on old steel split pulley. Fig. 3: Installation of four "B" belts on a compressor drive

across the belt, a satisfactory splice is made. The outside holes were punched with a 5/16-in. punch for double hooks, and inside holes were punched with a 3/16-in. punch. I



Showing how conveyor belts can be spliced by improvised wire hook splices

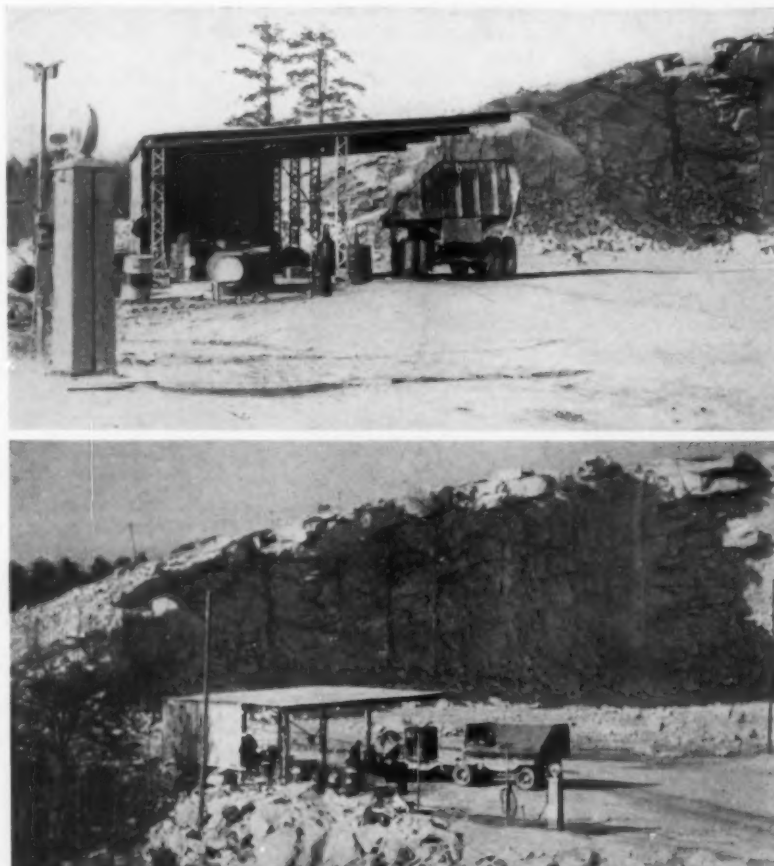
have put in pieces as large as a foot square. In another case where the belt was ripped on the side, a 6-in. strip was spliced in for a distance of 40 ft., using the hooks spaced 2½-in. apart to fasten back in place. Many thousand yards of material, both crushed rock and wet sand and gravel, have been put over this repaired belt and it doesn't show any sign of wear yet. This has to be steel wire as soft wire will pull out with the tension you have to put on a conveyor belt that is 165-ft. centers, with 24-in. pulleys.

## Maintenance of Quarry Hauling Equipment

By NELSON SEVERINGHAUS  
Supt., Consolidated Quarries Corp.

WITH the coming of war, we decided at Consolidated Quarries Corporation's plant that it was advisable to improve our maintenance facilities for quarry hauling equipment to help keep these trucks rolling and to conserve tires and other critical materials they use. This has been done by establishment of a service station at a convenient point on the edge of the quarry floor. The shelter for this was built of used materials already on hand including some old bridge steel for columns and roof beams and used pipe or boiler tubes for purlins. The roof is cantilevered over in front enough to protect one of the large semi-trailers used here. To reduce fire hazard, the gasoline pump was placed about 50 ft. from the station beside the road leading to it.

Facilities at the station include a compressor and tank for tire inflation, tire tools, tube vulcanizer, lubricant dispensers, water and gaso-



Views of service station on quarry floor of Consolidated Quarries Corporation to keep down haulage maintenance costs

line supply. Minor repairs are handled here, major ones requiring torch, welder or heavy tools are sent to our maintenance shop. Convenience of the service station, located beside the usual circle of travel from shovels to crusher, has proved a great help in keeping trucks lubricated and tires properly cared for and inflated. Its location and its consolidation of needed tools and facilities at one place also greatly reduce time required for service, tire changes and minor repairs. Altogether it is a big help towards keeping 'em rolling and conserving on critical materials.

## Two-Way "Barney Car" System

By J. Q. TAYLOR  
Gen. Supt., New York Trap Rock Corp.

WHEN the New York Trap Rock Corporation opened up a new 80-ft. level at its Haverstraw, N. Y., quarry, it was confronted with an 11 percent incline problem.

At first we were using the Grico twin engine trucks and Easton TR-10

trailers on an 11 percent grade which we used for one year, but found it too expensive in gasoline, tire wear and especially hard on the transmissions of the trucks, and we were only able to carry a 6½-cu. yd. or 8-ton pay load.

During the fall and winter months I built a model to help bring the trucks up the incline with a much larger pay load without any added power since it was almost impossible to buy anything under the present priority set-up with the exception of barney car wheels and cable.

After going through Woolworth and Sears Roebuck stores for the material needed for my model, I purchased two small toy trucks and two small toy cannon on wheels that I used for Barney cars, and small awning sheaves on which I used a silk fishing line for cable. For my 11 percent incline I used a ¾-in. by 6-ft. board bent on both ends so that after the board was placed on a few props it had the same grade as the one with which we were confronted.

I figured that without any lost

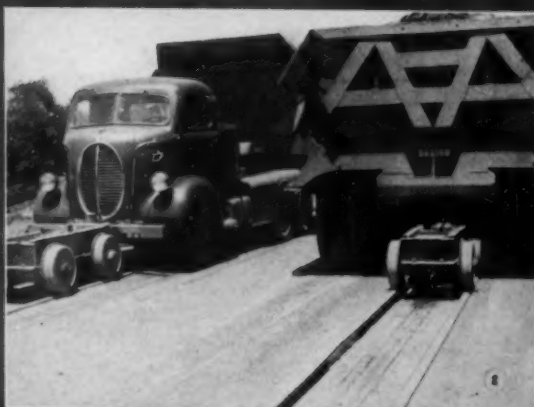
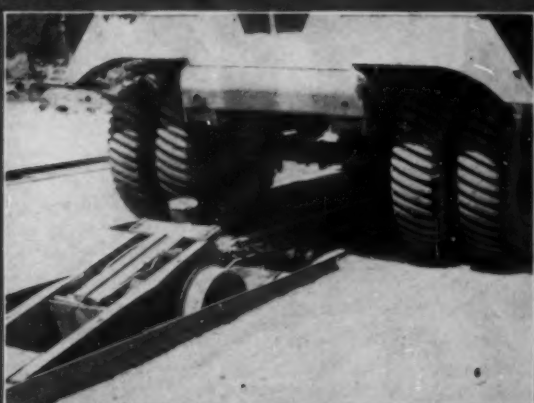


Fig. 1: Showing loaded truck and trailer at top of incline going away on level with the barney car coming to a stop in the braking equipment. Fig. 2: Trucks passing on the incline, showing the location of the barney cars. Fig. 3: Truck at the bottom of incline and loaded truck at the top. Fig. 4: J. O. Taylor, designer of system. Figs. 5 and 6: Barney car going down and coming up



## CONTEST

friction from the cable running over sheaves that the empty truck going down hill would balance the one coming up, so that the one coming up would only have his pay load to haul thus the truck going down with some added power would help the load coming up thereby increasing the amount of pay load.

After my model was all completed and working to my satisfaction, Mr. Stirling Tomkins, president of the New York Trap Rock Corporation, and my employer, gave me the "Go Ahead" sign to try it out on the Haverstraw incline. So this past spring I started to install it at the quarry on a large scale.

At this writing, it has been operating four months and doing everything and a lot more than I ever figured that we could do with it.

The whole idea of the arrangement is shown clearly by the illustrations accompanying this article.

I am again using the Barney car system for hooking on and unhooking the loads and empty trucks without stopping either vehicle. The "Barney Car" runs on a 24-in. gauge track which the trucks straddle. On the front of each truck there is a heavy bumper that engages the front of the "Barney Car" on its way down. The other "Barney Car," coming from a pit that the loaded truck and trailer straddles, engages the back axle of the trailer. This is all done while the trucks are in motion. The unloaded truck then uses some of its power pushing down on its "Barney Car" which in turn transmits that power to the back of the loaded trailer on the way up. By this ar-

rangement the driver of the empty truck on the way down does not have to use his brakes, thereby saving on brakes and tire wear from excess braking. When the empty truck reaches the bottom of the incline, the loaded truck is at the top and just pulls away from its "Barney Car." The one that was being pushed down the incline by the empty truck just runs off in a pit, allowing the truck to pass over as everything is in the clear. While this "Barney Car" is running on down in the pit, which is much steeper than the incline, the top "Barney Car" runs on the level at the top, which of course, would bring this car up pretty fast after the loaded truck had pulled away.

One of the illustrations shows a close-up of the braking equipment that I put on the top to stop this car very suddenly. I first used the "squeezed" type rail with springs for stopping the "Barney Car" but found this was not enough. I therefore put a bar and bumper with a large coil spring underneath so that when the car comes into the squeezed rails the front of the "Barney Car" catches this bumper and the coil springs take the last shock from the sudden stop just before the "Barney Car" reaches the vertical sheave through which the cable is carried to the underground passage. The cable is carried from one track to the other through two large vertical sheaves and two half vertical and half horizontal that are under heavy plates which the truck passes over; also the  $\frac{3}{4}$ -in.—6 x 29 wire cable runs from one of these sheaves to the other through a small tunnel underground.

The incline is 747 ft. from the back of the pits on the lower level to the top level. Trucks are making this distance in 48 seconds, thus giving plenty of time to get a truck up every minute when the time requires us to do so. If faster time is required we can do that also as the Gricos have made trips in 40 seconds. We are making the grade with standard Chevrolet tractors, having an Eaton rear end, and hauling a 15-ton pay load, which has about doubled our pay load and has cut down on maintenance.

There is always the possibility of the cable breaking but with brakes on the trailer no trouble should be experienced holding the load any place on the incline. To prevent the "Barney Cars" from being wrecked should they run away whenever the cable would break, I have installed



Above: Looking up the incline on the braking system for stopping the barney car at top of incline. The squeeze rail system may also be seen, including the coil spring and bumper that latches front of barney car and also the vertical sheave at the top that carries cable under ground across to other track. Below: Looking down grade on the braking equipment at top of incline for stopping the up-coming barney car

a cable trough in each pit at the bottom of the incline with some slack on one end so that when the car runs into the pit it catches on this cable, acting as a spring to take the shock from the "Barney Car" preventing it from hitting the back of the pits.

I used the "electric eye" for starting. As the loaded truck passes over the pit, it cuts across the rays of the "electric eye" which gives the driver of the empty truck at the top of the incline the "go" sign to start the loaded truck moving it over enough to allow the "Barney Car" to come up behind the trailer. The empty truck at the top of the incline controls the timing.

If there is no empty truck at the top to come down, there is no need of another loaded truck to come up because something must be wrong at the crusher, and, of course, if there is no load at the bottom to come up, something must be wrong with the shovel so there is no need of an extra empty truck to be at shovel.

We are running four trucks to one shovel on this incline and find that it works out very satisfactorily. There is always one truck at the shovel to be loaded, one with a load on the incline, one empty on the incline, and one loaded at the crusher which is dumped in time to take its turn on the down incline run.



Arrangement of chute and bucket elevator for elimination of segregation in stockpiles

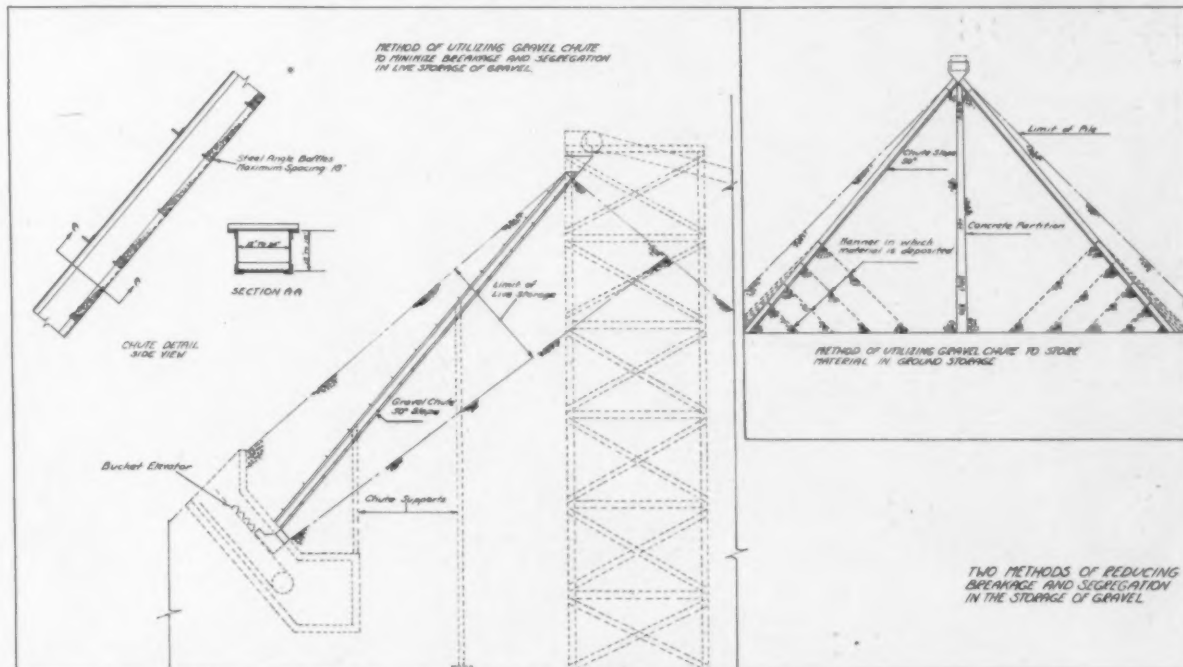
### Elimination of Stock Pile Segregation

By T. R. FREYHOF

Metropolitan Sand & Gravel Co.  
Port Washington, N. Y.

SEGREGATION of either raw or finished gravel storage is very predominate when such storage is being made by the use of a conveyor for placing the aggregate into a high pile. Such a pile always has a core of fines. This core of fines or segregation can easily be eliminated by the use of a chute

which delivers the material to the bottom of the pile. This chute should be placed on a 50 deg. angle. The aggregate will follow the chute until it arrives at the top of the storage pile and then will run out over the pile distributing both the fines and the coarse all through the pile. If the chute is not made steep enough the aggregate will back up in the chute, will then run over the sides at the top and will not spread the fines to the bottom of the pile.



Showing details of chute and bucket elevator to reduce breakage and segregation in the storage of gravel

This chute may be used for the storage of raw material when it is to be reclaimed by the use of a tunnel conveyor or elevator with the draw gate at the bottom of the pile. When used with the bottom draw gate the end of the chute must be located just above this gate.

The chute may be constructed of any width, 12 in. up to 24 in. The sides must be at least 12 in. high. The higher the sides the more strength and the less amount of supporting posts will be required. Sides must be high enough to permit fastening them together with angles and allow the material to pass under.

When used with raw storage, especially rough aggregate, it is essential that angles be placed in the bottom of the chute to deflect the aggregate's rapid advance, eliminating excessive wear. Such angles may be either welded or bolted in place. The leg of the angles should be turned up to help hold them in place. These angles will hold a pocket of material which will take the wear instead of the bottom of the chute. It is necessary

that substantial vertical posts be installed to support the chute. This is especially important when material is removed through a bottom gate.

## Kiln Lining Record

By V. E. WESSELS  
Chem. Engr., Missouri Portland  
Cement Co.

IN THE BURNING of portland cement clinker, the service of the refractory kiln lining is of utmost practical importance. A simple method for keeping an accurate record of the life of "hot zone" liners is described.

A chart, about 13- x 24-in., as shown in the illustration, is used. At the top of the chart is a sketch of the kiln drawn to scale and showing the kiln shell and refractory lining. Only 110 ft. of the kiln is shown, since it is very seldom that any lining replacements are necessary beyond 90 ft. The kilns for which these charts are designed are 240 ft. long. The kiln shell is divided into sections, and the tire locations are shown to facilitate "spotting" the thin or repaired areas from the outside, as well

as the inside, of the kiln. The kiln is also divided into 10 ft. sections.

The chart itself consists of 52 horizontal spaces which correspond to the weeks of the year, with the 10-ft. kiln sections being projected vertically across these spaces. Thus, the distance from the front of the chart represents distance within the kiln. When a lining repair is made, the position on the chart is located by the week in which the repair is made and the position in the kiln.

For example, by referring to the chart in the illustration, during the week of March 29, a 4½-ft. section, using liner D, was installed starting 5 ft. from the front of the kiln. Following this section, were 21 ft. in which liner A was used and 6 ft. in which liner B was used.

At the end of the year a complete resume of all lining service can be very quickly made and the relative cost of the different liners determined. After a couple of years of such records, it should be very apparent what liners are most economical for each section of the kiln.

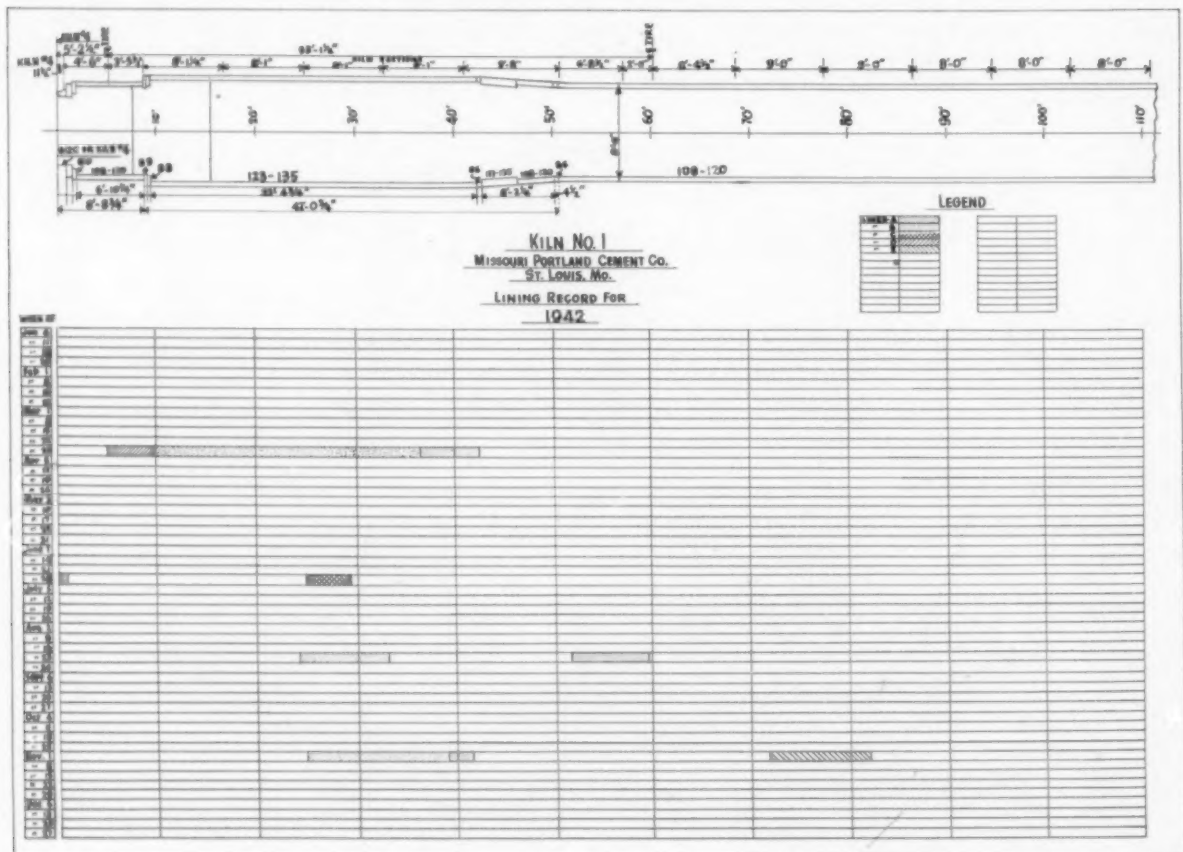
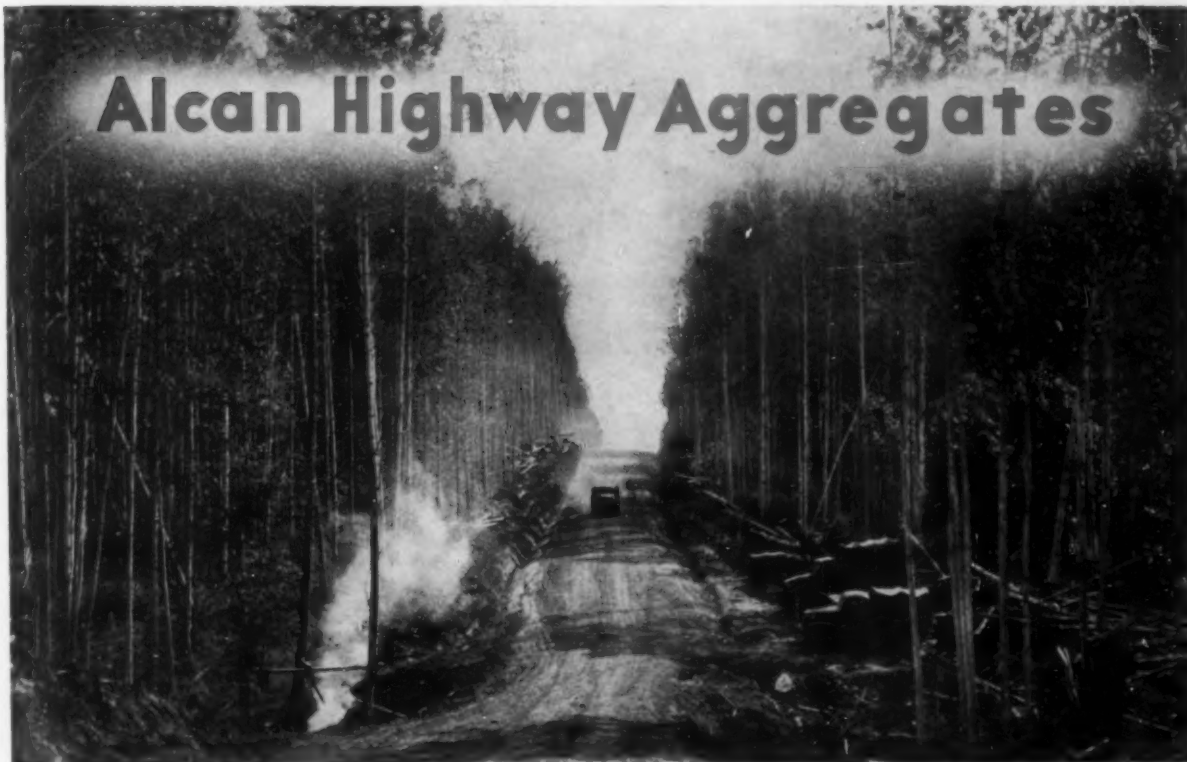


Chart showing complete kiln lining record for the year. Legend identifies different types of liner material

## Alcan Highway Aggregates



A typical stretch of completed highway which traverses through northwestern Canada into Alaska

**F**EW ENGINEERING PROJECTS growing out of the war have received wider publicity than the Canada-Alaska or "Alcan" Military Highway. Constructed in the unprecedented short time of eight months, this 1600-mile road today is funneling war supplies overland to Alaska and serving military airports of Canada and Alaska. In addition, it is performing the vital function of guiding airmen over the vast, uninhabited northern forests, acting as a ground brother to the radio beam and tying together a string of emergency landing fields.

Alcan Highway is a Corps of Engineers project, engineer troops having built the bulk of the pioneer road. About 40 American and a dozen Canadian contractors, largely under four management contractors, worked through the Public Roads Administration to progressively improve much of the highway during the year. Four sections comprising about 235 miles were delegated entirely to civilians.

These are the general facts. How is this road surfaced today? What about the materials of the region? Aggregate production? Concrete work? Plans for continued improve-

ment in 1943? Little has been said about this unique project from the specialized standpoint of Rock Products readers. The following notes should at least clear up a few points.

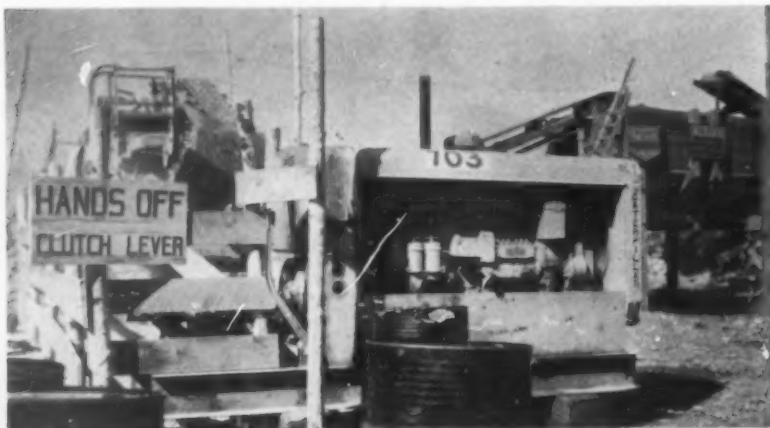
● **MR. McKEEVER** has just returned from a several weeks stay in Canada and Alaska where he has been gathering information for an article on the Alaskan Highway for "Roads and Streets." Through the courtesy of E. S. Gillette, publisher of the above magazine, Mr. McKeever has prepared for us this article on gravel production for the Alaskan Highway. His very complete and detailed description of this great war-time construction project will appear in the January issue of "Roads and Streets."

THE EDITOR

They were gathered in the course of extensive travel over the highway during November, when the last remaining stretches of the road were being holed through the timber and when Old Man Winter was beginning to hand the Army and civilian builders a sheaf of interesting winter maintenance and operating problems.

Alcan Highway is a gravel and stone road. Virtually the entire mileage had been fortified with some depth of surfacing by the time of the late-November freeze-up. A small portion is completed to the highest standards of gravel roadway design; about 102 miles in the southern end and in the vicinity of Whitehorse, to be specific, were brought to a stage of development recommended by the Public Roads Administration for permanent heavy-duty construction in the region. This standard calls for a well-graded roadway, 30- to 36-ft. shoulder to shoulder, with 12- to 16-in. of selected gravel base and two layers of graded material of 2-in. and 1-in. maximum size respectively totalling another 8- to 12-in.

The rest of the highway can best be described by the statement, "It



Typical portable Diesel power unit operating gravel plant

varies." The roadway probably averages 20- to 24-ft. wide. A few short stretches in rough country are closer to 16 ft., with short grades up to 18 percent. Most of the way, however, the maximum grade is under 10 percent, with hundreds of miles having few grades over 5- or 7-percent.

Many miles completed at great speed late in the season entered winter with only a light gravel covering. But most of the time some gravel had to be thrown down immediately behind the clearing crews to support heavy road machinery in the wet forest-protected ground. Millions of tons of gravel was placed, varying in depth from a thin blade-spread to perhaps 10 ft., with 18 in. as a likely average.

Over a hundred miles required corduroy—successive layers of logs sandwiched with gravel until the muskeg was stabilized. Muskeg plagued the builders all the way although much was sidestepped.

How good a road is Alcan? "It isn't a modern highway in the strict sense," explained Col. E. G. Paules, commander of the northern sector, "but you can tell your readers back in the states that it is a good pioneer road, about the best that human effort could produce in one year." And an amazing achievement of which everyone concerned may be proud, it should be added!

#### Surfacing and Aggregate Materials

The southern three hundred miles of the highway passes through comparatively flat country where black loam and gumbo clay are underlain by glacial drift. Outcroppings are shale, limestone and sandstone, the latter being soft enough to crush

readily under the wheels of construction machinery and trucks. It packs into a good road, but is certain to lack durability. Much of this material may have to be covered with other aggregates in 1943.

Farther north along the highway the prevailing mountain rocks are volcanic or igneous in character, with gneiss and other hard, durable materials available in abundance. In nearly all sections glacial sand and gravels abound; the entire region gives evidence of a recent ice age. Only here and there near the southern terminus is gravel scarce. Occasionally it was necessary to build an access road as far as 18 miles to get at satisfactory material.

Several stretches traverse exceedingly fine powdery silt, one sample of which actually assayed 99.7% passing 200-mesh. This silt presents a serious dust problem, and is an all-around

"no good" road material except possibly as a binder or admixture for other available local materials.

#### Two Contractors Had Crushing Plants

No crushing plants were used in the northern sector of the road during 1942. The shortage of ships between Seattle and the entry port of Skagway was an obstacle. The decision was to make best use of the abundant surface gravel and material from any rock cuts attempted.

In the southern sector, however, aggregates plants figured importantly in the work of two of the large management contractors. R. Melville Smith, a Canadian firm which marshalled the forces of ten Canadian construction contractors, used seven crushing and screening plants along its 48-mile project at the extreme southern end of the road. This job is a relocation of the old narrow and steep provincial road connecting the railhead at Dawson Creek, B. C., with Fort St. John to the north. Under the Public Roads Administration's direction, R. Melville Smith spent most of the season performing the heavy grading and placing 6 in. of selected base and graded surface material. Two large primary jaw crushers were used to reduce very coarse gravel which abounded in 3-in. to 6-in. stone.

At least one of the crusher plants will be used this winter in connection with concrete abutments for a permanent bridge being built across the Peace River. Most of the Smith outfits, however, finished their assigned sections of road in the Autumn and moved their equipment 400 miles



Gravel pits were kept going all along the highway during November to fortify the road for winter hauling of military supplies



Quarrying work will keep going all winter as weather permits, to stock pile material for spring construction



Roverud's foreman talking it over with Okes' graveling superintendent, W. D. Torgerson. One of a dozen aggregate plants which did important work on the Southern Sector



Spreading road material over subbase of Alcan highway

north to points above Fort Nelson to widen and improve the Army-built roadway. Undoubtedly some of the seven aggregate plants will be moved north for this work, or for concrete aggregate for permanent bridges planned for 1943.

The other management contractor using aggregate plants is the Okes Construction Co. of St. Paul, Minn., whose 14 unit contractors (nearly all Minnesota firms) built 26 miles of standard 30- to 36-ft. gravel and stone road on north from Fort St. John. These firms later deployed all the way along the 265 mile stretch between Fort St. John and Fort Nelson and progressively improved this leg in cooperation with the Army's pioneer road crew.

One of Okes' outfits, Roverud Brothers of Winona, Minn., acted as a quarrying and surfacing contractor, operating several portable crushing and screening plants along the route. One plant visited, which was producing crushed sandstone from a hillside quarry, included the following equipment: 100-cu. yd. per hour portable Pioneer crushing and screening plant; Invincible  $\frac{3}{4}$ -cu. yd. and Northwest 1-cu. yd. gas shovel; 2 Koehring Dumpsters; Sullivan and Gardner-Denver air hammers; LeRoi light plant; numerous Ford dump trucks equipped with Thornton Tandem drive; 2 batching bins; semi-portable repair shop with both electric and acetylene welding equipment.

Much of the first 26 miles was given a 12-in. layer of selected pit-run gravel followed with 8 in. of graded 2-in. maximum crushed gravel or sandstone and a 4-in. topping of 1-in. maximum material. As

the summer progressed, however, it became necessary to reduce construction refinements and concentrate on maximum mileage of usable road.

The aggregate plants were reinforced on this work by numerous gravel pits. Some were manned by  $\frac{1}{2}$ - or  $\frac{3}{8}$ -cu. yd. gas shovels, while in others hillside gravel was bulldozed into the trucks through ramp loading platforms. One typical ramp pit employed a small Allis-Chalmers tractor, with a Gopher  $\frac{1}{2}$ -cu. yd. shovel doing general loading and cleanup work.

Hundreds of miles of road, however, was graveled by the Army forces or by follow-up civilian equipment, simply by dozing or sledding material from the roadside. Getting at gravel wasn't always easy. At times it meant clearing an amphitheater in the dense forest, bulldozing away hundreds of big trees along with a thick covering of humus. At other times it took access roads complete with culverts and small bridges.

A word about the winter tasks in progress along Alcan. The Army's

(Continued on page 127)



More crushers will be needed in 1943 to repair Alcan Highway after the spring thaw



This stone crushing and screening plant on Alcan Highway was operated by Roverud Brothers, Winona, Minn., a contractor under Okes Construction Co. of St. Paul

## Cement to Magnesium Manufacture

Ford Motor Company at Michigan plant uses portland cement plant in first stage of magnesium recovery

By GERALD ELDRIDGE  
STEDMAN\*

**T**HE INTEREST of ROCK PRODUCTS' readers in the metal magnesium springs from the fact that they are the producers of the raw material. True, they have never thought of themselves as miners and processors of *magnesium ore*, but such they have now become in a few instances. The "ore" is so plentiful in great areas of this country that it has been considered a common rock, yet the best grades of ore, or dolomite, are relatively not common, although in certain sections of the country it is extensively used for lime manufacture, for agricultural limestone, building stone, and to a smaller extent as a source of magnesia in one or more of its various forms for refractory, pharmaceutical, chemical and other uses.

The first stage in the reduction of magnesium ore, or dolomite, is not

\*Webster Hall, Detroit, Mich.

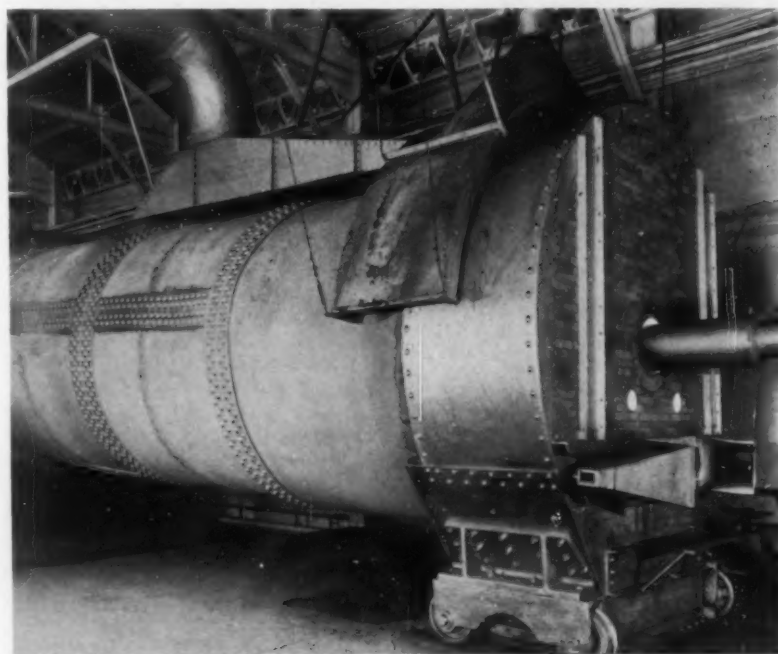
different from the ordinary manufacture of dolomitic lime for any other purpose, but the conversion of a famous portland cement plant to be part of a new magnesium reduction plant is of much interest. It is now, one might say, a double-purpose plant, for it could readily be operated as part of the magnesium plant or as a portland cement plant.

The Ford Motor Co. is now playing a dominant part as a magnesium producer. Ford carries out every step in the production of magnesium from dolomite through casting into various parts within its own Rouge plants. I have previously dealt with the technical phases of the smelting of magnesium by Ford, using the ferrosilicon process, in a "Ford Makes Magnesium" article which ap-

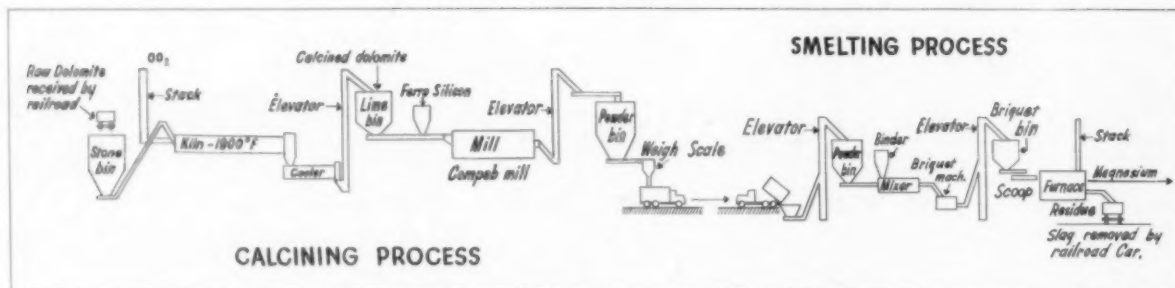
peared in the September, 1942, *Chemical & Metallurgical Engineering*. It is the purpose of this present piece to describe the process of calcining and briquetting to make ready for such smelter. To accomplish this preliminary phase of the process, Ford has discontinued the manufacture of cement and has converted that equipment towards treating the dolomitic rock prior to actual magnesium smelting.

The calcium-magnesium carbonate, dolomite, also known as pearl spar and magnesium limestone ( $\text{CaCO}_3\text{MgCO}_3$ ) contains theoretically  $\text{CaO}$ , 30.4 percent;  $\text{MgO}$ , 21.9 percent;  $\text{CO}_2$ , 47.7 percent. This can be grouped ( $\text{CaCO}_3$ ) calcium carbonate 54.2 percent; and ( $\text{MgCO}_3$ ) magnesium carbonate 45.8 percent. It often contains such impurities as silica, manganese, iron. Dolomite most frequently occurs as a massive, finely to coarsely granular rock resembling limestone; grey, white or bluish. It crystallizes in small rhombohedral crystals, often with curved faces; usually white, pink or yellow in color. Its physical properties are: Hardness, 3.5 to 4. Specific Gravity, 2.8 to 2.9. It does not melt—at 2700 to 3100 deg. F., it is reduced to  $\text{CaO}$  plus  $\text{MgO}$ . This reaction may take place at any temperature above 900 deg. C., but traces of  $\text{CO}_2$  remain. Its refraction, when pure, is 1.500 to 1.681, but iron content increases this index. In crystals, it has a vitreous lustre, translucent to opaque, rather brittle, with a good solubility in hot acid. Its fracture in massive form is rough to nearly conchoidal.

Some of the more important refractory dolomite quarries and burning plants are in Ohio, Pennsylvania, West Virginia, California and in Michigan. The Virginia Polytechnic Institute is making studies concerning it at Blacksburg, Virginia. Its chief refractory markets hover around the iron and steel producing districts of the country. The Ford source is from the Upper Michigan peninsula from whence it is transported over Ford's Detroit, Toledo



Interior of kiln is kept at a temperature between 1900 and 2600 deg., depending upon the yield of the various limestones. Dehydrated and decarbonated material falls through a 2 x 4-ft. chute into two coolers



Flow sheet of calcining and magnesium metal reduction process

and Ironton railroad to the Michigan plant.

Magnesium, obtained from dolomite in a ferrosilicon mix, after proper calcining and by destructive distillation, is the globe's sixth most abundant element and fourth most abundant metal. It occurs nowhere in free condition. It is a silvery-white metal, characterized by extreme lightness, having a specific gravity of only 1.74 (density 0.0628 per cu. in.), thus being two-thirds as heavy as aluminum and one-fourth as heavy as iron. Pure magnesium is comparatively soft and of low mechanical strength. Certain magnesium alloys, however, and particularly that with aluminum, have high mechanical strength, excellent physical properties and unusual lightness. Since the penalty of excess weight is intolerable in aircraft production, magnesium is the prized war-winning metal; the number of castings

per aircraft motor of the Pratt & Whitney type having swiftly increased during the past year as the supply of magnesium has become more plentiful.

The war-production importance of magnesium, lightest of metals (whose specific gravity is stepped up scarcely more than 0.06 by alloying) is indicated in its abilities to remove useless inertia, lower energy expenditures, decrease adjacent shocks in start and stop, in its lowered gyroscopic action, better balancing of parts, increased payload in ratio to dead weight, lowered operating costs, greater speeds and the delivery of more horsepower per pound.

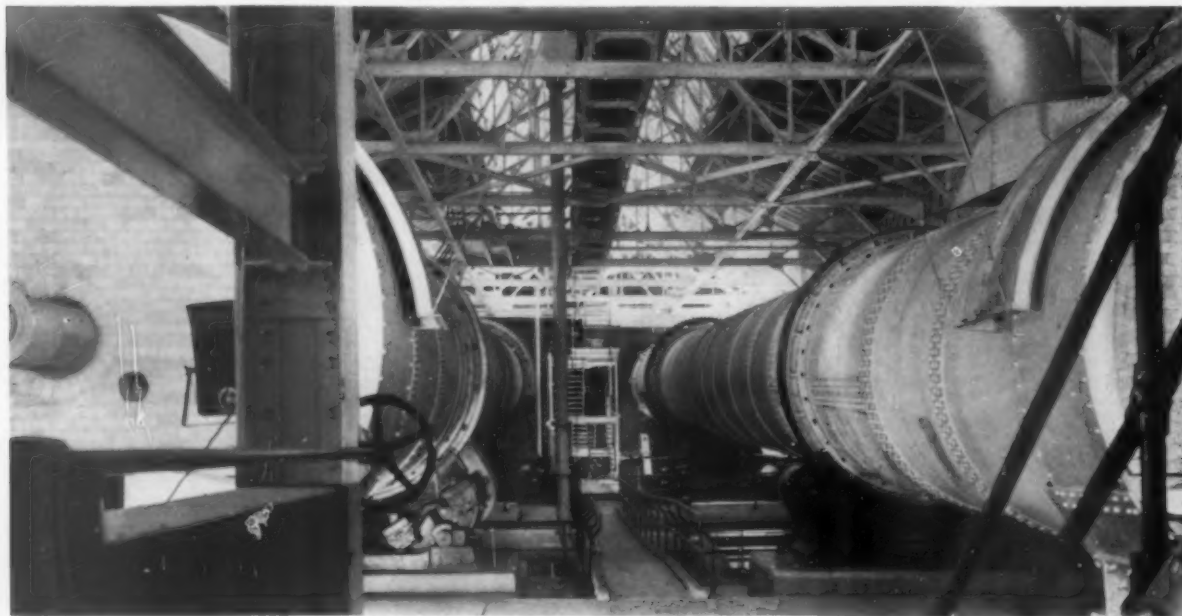
From 1927 and until recently, the sole manufacturer of magnesium was the Dow Chemical Co., Midland, Mich., which recovers it from natural brine that is precipitated to gain a residual liquor, containing only the chlorides of calcium and magnesium.

The metal is obtained by a series of crystallization and electrolytic steps. Faced with the need of a far greater expansion of magnesium production, the government approached the Ford Motor Co. in the winter of 1941 to produce magnesium by the ferrosilicon process.

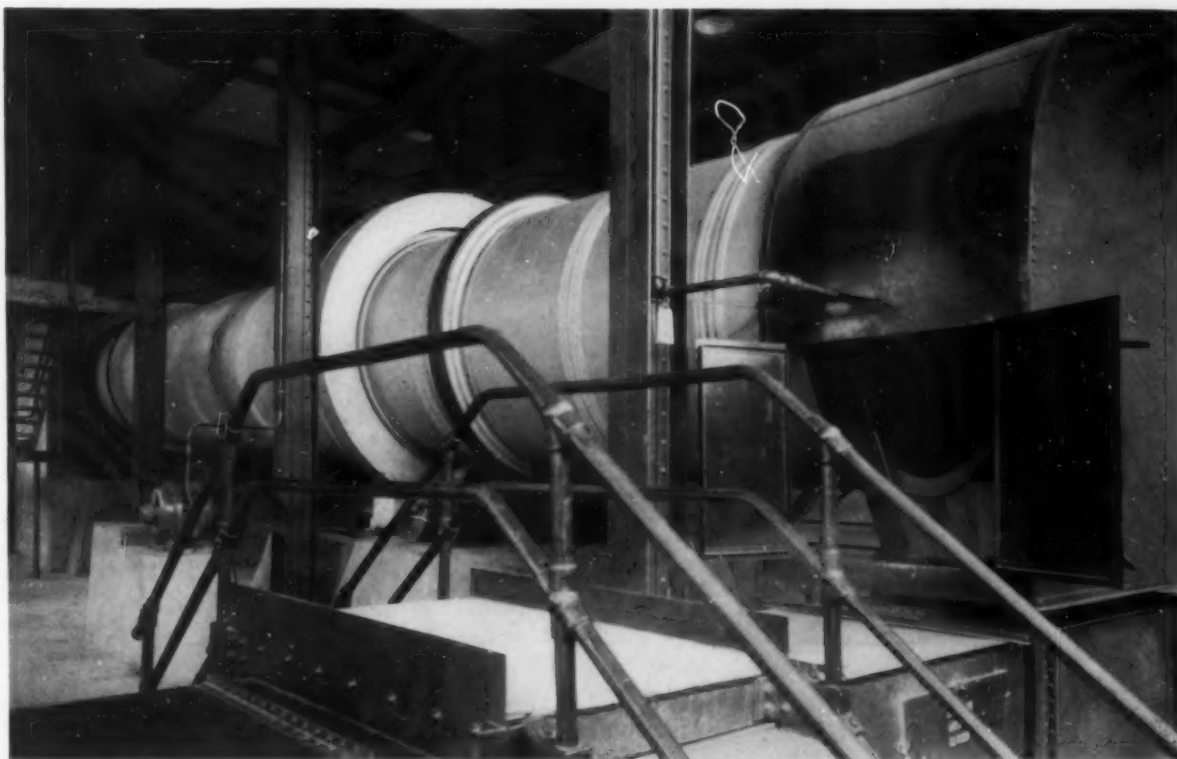
Ferrosilicon is a product of the electric furnaces; made from silica, iron and carbon. The combination of calcined dolomite and ferrosilicon, properly proportioned in a vacuum at a high temperature, causes the magnesium to be driven off as a vapor. Coming into contact with a cool surface, this condenses while the iron rides along on the coat-tails of the silicon. This equation, not properly balanced but as closely as can be revealed without offending censorship, is:



The production flow at the Ford plant proceeds in two stages—cal-



Two 10- x 150-ft. rotary kilns in the Ford River Rouge cement plant which are being used to manufacture dolomitic lime, the first step in the manufacture of magnesium



Two 8- x 60-ft. rotary coolers through which an induced draft continually blows. Dolomitic lime is cooled in 15 minutes and drops into a bucket conveyor which takes it to the finish grinding mills

cinig and smelting. I refer the reader interested in the Ford smelting technique to the article earlier mentioned. It is the calcining of the dolomite and the utilization of converted Ford cement-making equipment that is the proper subject of this article. A flow sheet of the process, graphically indicating the steps in the calcining process is shown herewith.

The Ford cement plant was erected in 1922-23. In the spring of 1924, production of portland cement was started in volume required to meet fully the requirements of all Ford construction work and, at the same time, to utilize slag . . . theretofore, a waste product of the Ford blast furnaces.

This Ford plant was the first to manufacture cement from blast furnace slag by the wet process, a method which was not alone efficient but in accordance with the utmost cleanliness and hygiene in that it eliminated all dust from the manufacturing process until the final stage. The plant was especially designed to avoid handling and hauling. Until the slag was converted into the finished cement and sacked, it was never

touched or handled by anything other than machinery. Capacity production was 2000 bbl. a day. The elimination of occupational disease hazards, such as silicosis, made possible by the origination of this process are in themselves a worthy story.

It was only necessary to install a belt conveyor to bypass the raw grinding mills—where in cement manufacture, the slag was mixed with limestone—to make this plant ready for the calcining of dolomite. In the conversion, a screw conveyor for carrying the calcined rock and ferrosilicon mixture to the weighing station and a scale to weigh the bulk material before shipping it to the briquetting unit was also required.

The process of the calcining from the stone bin to the kiln where the  $\text{CO}_2$  is removed, to the cooler, to the lime bin, to the addition of ferrosilicon, to the grind and mix compeb mill, to the powder bin, through weighing to the truck for movement to the smelter—all this is relatively a simple process and has represented no unusual conversion problems.

The raw dolomite is received at the plant from northern Michigan quarries as crushed stone in sizes from

one-half to one inch in diameter. It is dumped from the railroad cars into huge storage bins which empty onto a belt conveyor, feeding directly into the kilns. This belt conveyor is 170 ft. long and feeds into the plant's two kilns.

These two kilns are 150 ft. long and 10 ft. in diameter. They are lined with refractory brick, and revolve on rollers. They are slightly tilted, approximately one-half inch per foot, providing a gravity decline of better than 6 ft. per kiln.

The raw dolomite from the stone bins and over the belt conveyor enters at the high end of the kiln and rolls slowly downward by gravity as the kiln revolves, towards a pulverized, coal-fed flame under a forced blast. The interior of the kiln is maintained at a temperature between 1900 and 2600 deg. F., depending upon the yield of the various limestones. The  $\text{CO}_2$  escapes through a stack, in this decomposition. Ninety minutes are required for the dolomitic rock to travel this 150 ft. of kiln length. During the period, almost half its weight is driven off in  $\text{CO}_2$ .

At the lower end of each kiln, the

(Continued on page 137)

## Concrete Operations In Six States

**U. S. Transit Mix Concrete Corporation extends its ready mixed concrete operations into five states to handle large war contracts**

**R**EADY-MIXED concrete's contribution to the war construction program has been of unquestioned importance and the yardages poured so far have been tremendous. Most producers have had, or do have, war construction orders in varying yardages of concrete, but opportunities were presented for a few, large well-equipped and organized concerns to furnish contracts involving several hundred thousand cubic yards of concrete each. We refer to jobs like ordnance depots where speed in general construction and in the building of reinforced concrete storage igloos, etc., is of prime importance. Their locations are generally remote from localities where the amount of equipment and facilities necessary are to be found.

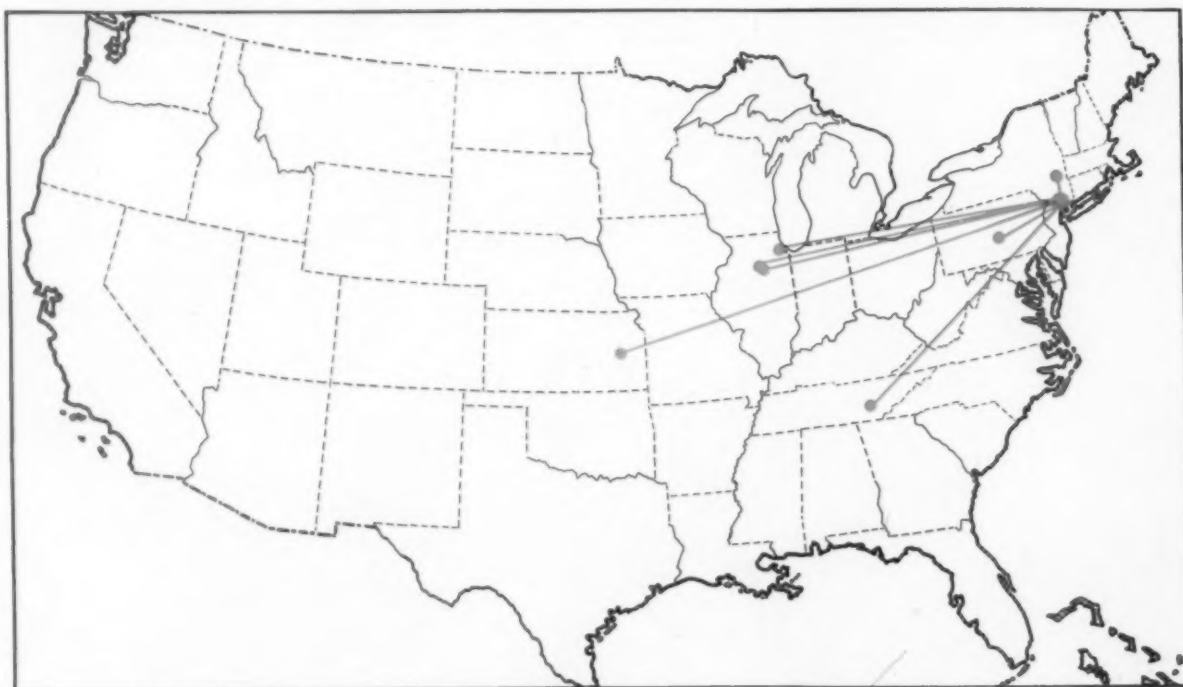
The far-flung transit-mixed concrete operations of the McCormack

Transit-Mix Concrete Co., Inc., New York, N. Y., are the subject of this article, since this concern, through its affiliate, the U. S. Transit-Mix Concrete Corp., has pioneered the idea of moving plants, equipment and personnel to distant locations where they are needed.

As many as five of these projects have been served simultaneously in five different States, and all contracts are being met ahead of schedule. They involve distances as far West as Kansas and South into Tennessee. The organization needed for maintenance of the equipment and coordination of the work can be appreciated all the more in times when new equipment, tires, etc., are practically impossible to get. The original New York fleet of truck mixers is handling the jobs, without any additions.

The taking of big Government contracts for war construction isn't the first time the corporation handled projects outside its permanent locations in the New York metropolitan area. But when there came a need for nation-wide contracting for ready-mixed concrete in connection with war construction this concern had a tremendous amount of equipment on hand, backed with experience in producing really superior concrete, ready to be put to work. Vision in taking war contracts has kept the equipment and personnel intact when curbs subsequently placed upon other kinds of building would have made it impossible to operate "at home" profitably.

The original company started as the Ready Mixed Concrete Corp. in May, 1927, with one central mixing



Map showing the widespread ready mixed concrete operations of the U. S. Transit Mix Corporation in six states





Left: Charging a truck mixer on big eastern ordnance job. To the right is emergency water tank. Right: Overall view of the same plant

plant located at 70th St. and the East river in Manhattan. The delivery fleet then consisted of trucks fitted with 3-cu. yd. Clinton bodies. McCormack Transit-Mix Concrete Co., Inc., was formed when the original merged with Transit-Mixed Concrete Co. early in 1929. Five dry batch plants were erected and operated about that time in greater New York City, the Bronx, Brooklyn, Queens and Manhattan. All were built along the lines of the original plant. At one time the fleet consisted of 99 Paris mixers of 5-cu. yd. capacity each on A. C. Mack trucks.

In 1932, an affiliated company, the U. S. Transit Mix Concrete Co., was formed, to handle contracts outside metropolitan New York City and the first outside contract was then taken. This first outside job was in the construction of a strip mill for the Bethlehem Steel Co. at Lackawanna, near Buffalo, N. Y. Later, a similar project was handled at Sparrows Point, Md. Experience gained from these two projects led to the selection of equipment and the operating practices which have worked out so well on the current war construction jobs.

Standardization of much of the equipment was found to be desirable since parts must sometimes be interchanged between plants. The same practice was followed in the purchase of moving equipment to replace the old fleet. None of the plants in service in 1929 are now in use and an entire new fleet of truck mixers was purchased in 1938. This equipment is now in use on the war contracts.

At present the fleet consists of F J Mack trucks powered by Cummins Diesel engines with 5-cu. yd. Jaeger, Chain Belt and Rex Moto-Mixers. Most of the truck engines are 6 cylinders and the rest have four. There are 93 units in service at the present time and out of the total 78 are in service outside New York City. Sturdiness was a consideration in the selection of truck equipment, since the mixers

are large and company policy is based on a program of maintenance to keep them in service indefinitely.

With one exception, the batching plants serving outside projects are all standard. These are Butler-built steel plants, each consisting of a 3-compartment aggregates bin of 150-cu. yd.

capacity, and two bulk cement bins. One is an overhead bin of about 200-bbl. capacity; the other a reserve bin that holds about 1000 bbl. Cement taken from bulk cement cars, by 12-in. screw conveyors, in the usual way is elevated to fill either the smaller bin or the reserve bin. The same ele-



Large batching plant which has been operating in the Middle West. This unit was taken down and reassembled at a new location in the same area but was enclosed with plywood to give better insulation for winter operations



Concrete batching plant set up for operation at big job in the Middle Atlantic states

# Correct Lubrication...



*is your wire rope's*  
**BEST FRIEND!**

If wire ropes are to give their best service—yes, even longer-wearing **HAZARD LAY-SET PREFORMED**—they must be lubricated regularly—and correctly. Not only will proper lubrication protect the many wires from corrosion and excessive wear, but will permit the internal wires which move one against another when the rope passes over a sheave or winds on a drum, to slide more freely and with less friction. For some short-lived services, factory lubrication is sufficient. For others, additional lubricant must be added in the field, and unless this is done with sufficient frequency, your wire rope is doomed to fail before its proper time. And this is no time to waste steel.

**HAZARD LAY-SET PREFORMED WIRE ROPE** ordinarily gives so much better, easier-handling, longer service than ordinary non-preformed rope that occasionally operators take its exceptional qualities for granted and forget the oil can. Don't do it. Lubricate your **LAY-SET** correctly, and you will get even longer service—even greater dollar value. All Hazard ropes identified by the Green Strand are made of Improved Plow Steel.

**HAZARD WIRE ROPE DIVISION** Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Fort Worth, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Tacoma  
**AMERICAN CHAIN & CABLE COMPANY, INC.** Bridgeport • Connecticut

## ● IMPORTANT SUGGESTIONS

Clean wire rope thoroughly before lubricating. Use kerosene and wire brush.

Passing the rope through high-pressure jetted steam has proved a very effective means of cleaning, especially larger diameters.

Wipe off excess lubricant.

Frequent lubrication with light-bodied lubri-

cant is better than infrequent treatment with heavier lubricants.

Lubrication of any wire rope is sufficiently important to warrant calling in one of the industrial lubrication men employed by oil companies or a Hazard man. These men can tell you which lubricant will handle your problems best.

**HAZARD LAY-SET** *Preformed* **WIRE ROPE**



Left to right: John Stapleton, dispatcher; Andrew J. Mullak, general superintendent; and Cal Meyers from the Area U. S. Engineers office at ready mix plant set up to provide concrete for big ordnance plant in the East

vator transfers cement from the large to the small bin when necessary.

In each of these standard plants, aggregates are received generally by rail (90 percent) and are dumped (bottom-dump cars) into a hopper of about 80-cu. yd. capacity. Belt conveyors handle the aggregates into the batching bin compartments. Under the hopper is a 30-in. conveyor which transfers to another of about 200-ft. centers.

All weigh-batching equipment is of 6-cu. yd. capacity with 4-beam scales. Mixing water is weighed in a No. 600 Butler water tank that has automatic electric controls to regulate the amount of mixing water per batch exactly.

The only exception to these standard plants is one now operating in Kansas, which was part of a permanent plant setup in Manhattan that was split into two for operation where needed outside New York City. That plant was erected on the East river just two years ago and at the time described in *Rock Products* (April, 1940, issue, pp. 59-60-61) was one of the biggest and most up-to-date in the industry. It was a 2-unit plant with separate bins and handling equipment for each batcher. Each unit had a batching capacity of 250 cu. yd. per hour. It was designed by the Blaw-Knox Company in cooperation with the company's staff. Incidentally one of the plants now in Kansas is gasoline-powered — the others have electric motors throughout. All plants have a one-way concrete drive underneath for trucks and are bolted to anchor bolts in concrete footings, so they can easily be dismantled.

Some of the recent important projects outside metropolitan New

York City so far are tabulated on another page of this issue.

The sizes of the contracts for these projects vary somewhat but all are

in excess of 150,000 cu. yd. of concrete. At Valhalla, about 400,000 cu. yd. of concrete was produced on a contract for the Delaware Aqueduct completed a few months ago. Two of the projects in Illinois were both handled from a single batching plant that was centrally-located. About 500,000 cu. yd. of concrete were produced for the combined contracts. In Pennsylvania, where the project has just been completed, about 175,000 cu. yd. were produced. Operations began in May, 1942, on this job. The others were still in progress as we write this article.

All the contracts are closed in New York City where the company has its executive offices, and each contract is independently handled from the main office. W. J. McCormack, president, and Joseph H. Dixey, vice-president, and Innis O'Rourke, vice-president, are the active heads of the com-

(Continued on page 109)



Part of fleet of mixers operated by U. S. Transit Mix Concrete Corporation at big Pennsylvania war construction job



Corner of completely equipped machine shop operated by U. S. Transit Mix in New York which repairs and overhauls all motor equipment for the various plants in different parts of the country

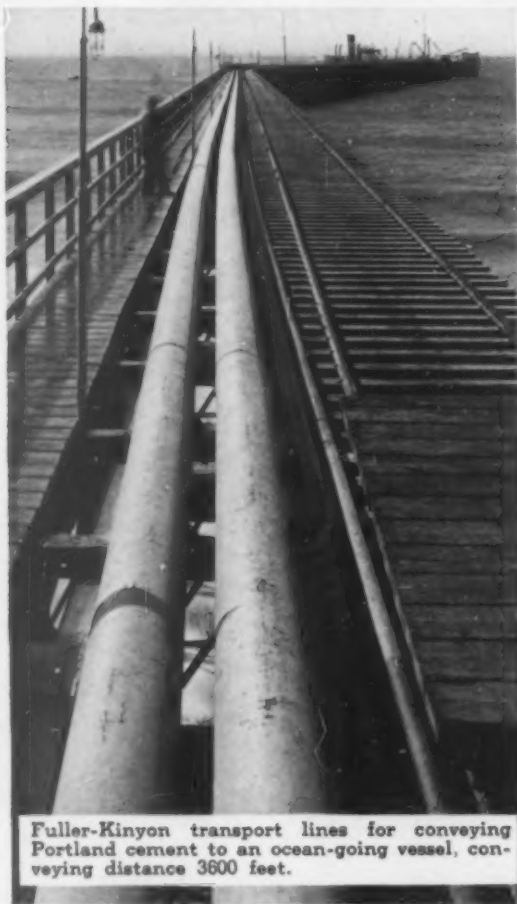
# ROCK PRODUCT PRODUCERS ALL STRIVING FOR VICTORY



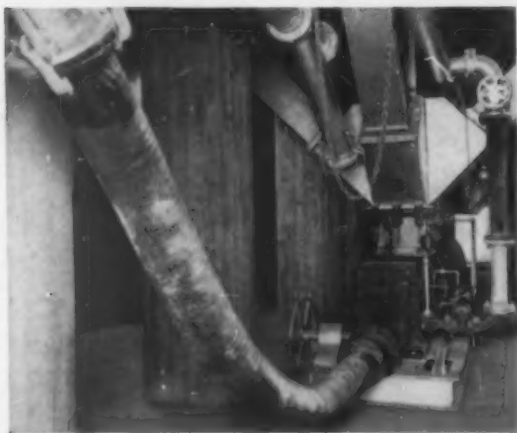
Typical of the war activities of the industry  
is this large concrete batching plant set up  
at a big Middle Western ordnance project

# FULLER

*serves*



Fuller-Kinyon transport lines for conveying Portland cement to an ocean-going vessel, conveying distance 3600 feet.



Fuller-Kinyon Pump conveying cement from silos to ocean-going vessel.

Pioneers in developing and building equipment to solve the industry's problems.



Fuller-Kinyon Remote-Control Unloader unloading cement from a river barge.

G-301

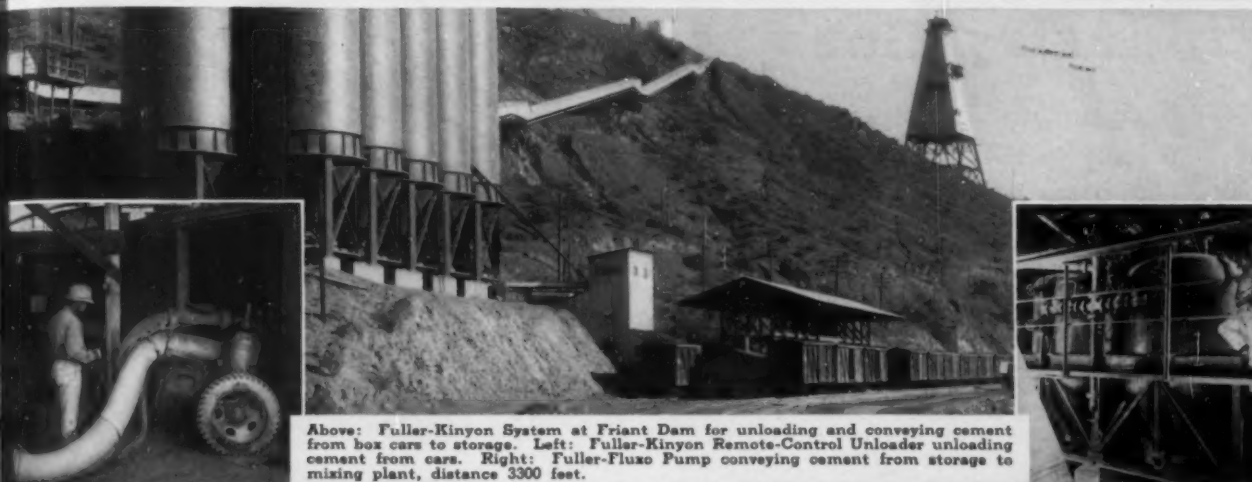
## FULLER COMPANY

CATASAUQUA — PENNSYLVANIA

CHICAGO—Marquette Bldg.

SAN FRANCISCO—Chancery Bldg.

# The Cement and Allied Industries



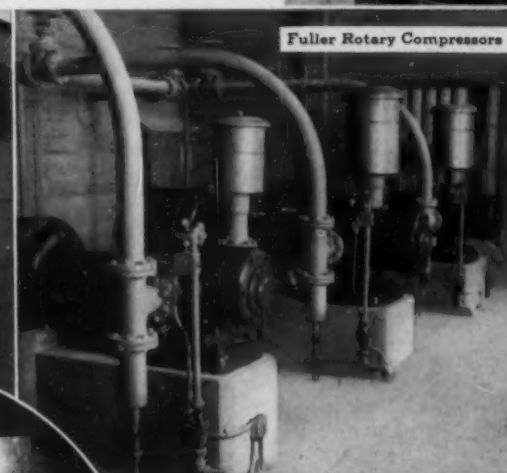
Above: Fuller-Kinyon System at Friant Dam for unloading and conveying cement from box cars to storage. Left: Fuller-Kinyon Remote-Control Unloader unloading cement from cars. Right: Fuller-Fluxo Pump conveying cement from storage to mixing plant, distance 3300 feet.



Portland cement cooler



The Airveyor Conveying System



Fuller Rotary Compressors



Rotary Gate Valves



Interior, Air-Quenching Clinker Cooler



Fuller Rotary Feeder



Fuller-Kinyon System conveying cement from silo to packer bins.



Fuller-Kinyon System unloading cement from hopper-bottom cars and conveying to storage in a ready-mix plant.

## PERSONNEL

### Industry Goes to War

Rock products industry has contributed generously to the war effort furnishing trained men to the armed forces and the Government

**W**E CAN TOUCH only lightly on the effects of War and War Industry on the personnel of the rock products industry. We haven't by any means adequate information to mention all who have a part. The best we can do here is to give a few shining examples of war industry service by the members of these industries, in the hope that these examples will stimulate readers to send us other items for publication in our "News About People" columns about those we have missed.

HENRY J. KAISER certainly heads the list, and he has had so much publicity that there is little left to be said. However, notwithstanding his strictly war industry activities as a ship builder, magnesium producer, and his suggestions for meeting post-war conditions, Mr. Kaiser is still proud of the fact that he is first and foremost a sand and gravel man. It seems his first real job was as salesman for a sand and gravel producer in Spokane, Wash. (some say Portland, Ore.), and he has never been divorced from the sand and gravel industry since.

According to interviews he has given journalists since he became so

much a national character, the sand and gravel business has been the foundation of much of his other enterprises. After he got into business for himself, in Oakland, Calif., he included crushed stone in his enterprise, as well as operating as a paving contractor. From that he got into ready-mixed concrete, and eventually into cement manufacture. According to his contemporaries he has been (and still is) a pretty tough competitor in all these lines.

Probably it is to his loyalty to the sand and gravel and allied industries that he still maintains his home office in the Latham Square building in Oakland, where he has been established many years, as the Kaiser Paving Co.—now known as the Henry J. Kaiser Co. The *Wall Street Journal* in an article on "Authentic Kaiser Group Alignment" said this company is the "Apex of the pyramid. A street paving, rock, gravel and cement concern in early days, it still carries on these activities and also has become the guiding company for the ramified Kaiser interests which include ownership or part interest in chemical, cement, shipbuilding, steel, machine tool, cargo ship engine, heavy construction, and other enterprises. Mr.



Henry J. Kaiser

Kaiser is president of the Henry J. Kaiser Co. which also manages other layers of the pyramid."

ERIC A. JOHNSTON, who served as president of the Chamber of Commerce of the United States during 1942 is also in the rock products industry although his other business interests in Spokane, Wash., figured more prominently in the news. He is chairman of the Washington Brick & Lime Co., which is also in the sand and gravel business. Mr. Johnston's chief service to his country has been his liberal views on the responsibilities of business leaders to really lead in civic enterprise.

CHARLES WARNER, president, Warner Co., Philadelphia, Penn., seems to have gone to war with his whole organization. At last report something like 110 of his personnel were in the armed services. The company has started building a plant to make magnesia for the Defense Plant Corporation and is furnishing dolomite to make magnesium and lime for many war industries. As a producer of sand and gravel and ready-mixed concrete the company has been supplying construction materials for many vital naval and military structures. The concrete mixer "float" shown in the accompanying illustration says 90 percent of its ready-mixed concrete goes to war. Probably other producers could show an equal record, but the Warner Co. is one of the largest if not the largest ready-mixed concrete producer in the world.



Concrete goes to War. Transit mixer truck of The Warner Co. on parade in Philadelphia

## PERSONNEL

CHAUNCEY C. LOOMIS, president of the New England Lime Co., North Adams, Mass., is another pioneer manufacturer or producer of magnesium. It was he who introduced the now famous Pidgeon process in the United States, and was the first to visualize what this could mean to the dolomitic lime manufacturer.

NORMAN E. KELB organized the Cumberland Quarries, Inc., Indianapolis to produce both coarse and fine aggregates for the Wolf Creek dam in southern Kentucky near the Tennessee line. The plant was almost completed when restrictions on construction by the W.P.B. held up the job—probably for the duration. With Mr. Kelb as president, the company includes: C. D. Ward, vice-president; A. M. Campbell, secretary-treasurer; A. B. Johnson, general superintendent; H. H. Nagel, quarry superintendent; C. A. Broecker, engineer.

LEWIS R. SANDERSON, a former superintendent, National Gypsum Co., Buffalo, N. Y., is general manager of the Blue Bonnet Ordnance plant, "somewhere in Texas"—a Defense Plant Corporation enterprise, built and operated under a contract with National Gypsum Co. CHARLES H. MARQUESS, superintendent of the company's gypsum mines in Sun City,

Kan., subsequently joined Mr. Sanderson in Texas.

A. G. STREBLOW, president of the Basalt Rock Co., Napa, Calif., originally a crushed stone, sand and gravel and concrete products producer, was building steel barges for his own use in 1938. When the war came on he utilized his barge building experience to good advantage and is reported to be building all kinds of floating equipment for the government.

DAN P. EELLS, HOWARD P. EELLS AND SAMUEL EELLS, brothers of Cleveland, Ohio, whose father was a pioneer in the cement and quarry industry, founded the Basic Magnesium, Inc., Nevada, which will operate one of the largest magnesium plants in the world. Recently they sold their interest to the Anaconda Copper Co., but they are still in the war business in Ohio as dolomite quarry operators and manufacturers of dolomitic refractories—Basic Refractories, Inc.

### Serving in Civilian Capacities

W. M. KETCHIN, president, Ketchin Brick & Tile Co., Fort Lauderdale, Fla., (concrete products) sends an interesting memorandum which shows how most of his family (who compose his

staff) are being diverted to civilian (and military) activities. He writes in answer to a request for a photograph of his military son:

"The only picture I have at present is one showing the whole personnel of the corporation. My four daughters and son, comprising all officers, directors and stockholders of the Ketchin Brick & Tile Co.; myself in the center, on my left Dorothy, of West Palm Beach; my son, W. A. Ketchin, secretary, now in the Ferry Command, U. S. Army; Elizabeth, treasurer, West Palm Beach, wife of Lieut. Col. F. K. Herpel stationed at Fort Bragg. On my right, Pauline, Fort Lauderdale, wife of W. J. Hale, and Ethel of West Orange, N. J., wife of James Welch.

"We are one of the firms laid on the shelf for the duration, as our business was civilian construction, and where we employed 40 men at our plant, we now have only enough to keep the plant in shape.

"In January we built a demonstration cottage here at the plant, where we occupy 19 city lots. The cottage is an entirely new method of housing. It is all concrete except the doors and door jams. The walls are 12 in. thick and ventilated throughout, made on the W. E. Dunn brick machine. The floors are our K Stone tile on our K Stone Concrete joist. Roof is also our concrete joist and tile. The outside walls are gun glazed outside and decorated directly on inside with du Ponts Casein Lithophone. (No furring or lathing or plaster.) The entire bathroom, including the tub is built of our beautifully colored K Stone tile.

"The enthusiasm shown by the many visitors who have seen the cottage, leads us to believe that there will be plenty of work for us as soon as Government restrictions can be lifted on civilian construction."

E. C. SMITH, Jr., general manager of the West Virginia Sand and Gravel Co., Charleston, W. Va., is serving as local administrator for conservation of war transportation (O.D.T.)

JAMES P. BARNES, treasurer, Alabama Asphaltic Limestone Co., Birmingham, Ala., is district manager of the W.P.B.

WILLIAM SCHOENBERG, general president of the United Cement, Lime and Gypsum Workers' International Union (A. F. of L.), Chicago, Ill., is serving on the Labor Division of the



W. M. Ketchin, surrounded by his four daughters and son, all stockholders and officers in his company

W.P.B. ARTHUR J. STRUNK, first general vice-president of the union, is alternative representative.

J. P. EYRE PRICE, vice-president and general manager, Wyoming Sand & Stone Co., Scranton, Penn., is serving as district manager of the War Pro-



J. P. Eyre Price

duction Board at Scranton. He writes: "W.P.B. has combined the Scranton and Wilkes Barre district offices under one head in Scranton (and not a bald head either, Rocky!)." He has said he is enjoying his experience in spite of the fact that he is a Republican.

LT. COL. HENRY A. RENNIGER, assistant director, Third Civilian Defense Region, Baltimore, Md., in civil life is the head of the safety engineering department of the Lehigh Portland Cement Co. He was a reserve officer and one of the first to go when war threatened.

MAJ. HARRY D. JUMPER, Engineers Corps., U.S.A., former specification engineer and in charge of the ready-mixed concrete department of the Consolidated Rock Products Co., Los Angeles, Calif., is now in charge of materials for the Pan American Highway in Central America. At the time he was commissioned he was Mayor of Azusa, Calif. Maj. Jumper is a veteran of the first world war, during which he served in naval aviation. He is one of the best known concrete specialists on the coast and has been with the Consolidated Rock Products Co. since 1923. According to a recent report the company had contributed 51 employees to the armed services.

## Men In the Armed Services

BRIGADIER GENERAL HANFORD MACNIDER, U.S.A., in private life, when he has been permitted to enjoy any, is president of the Northwestern States Portland Cement Co., Mason City, Iowa. He was recently in the news as having received eight wounds from a Japanese hand grenade in the fighting under General MacArthur on the northeastern coast of New Guinea, in the South Pacific. He suffered two wounds in the right arm, one in the abdomen, two on the right thigh, one on each knee, and on the right hand. The general was taken to a hospital in Australia.

Gen. MacNider went to France in 1917 after Mexican border duty with



Harris & Ewing

Gen. Hanford MacNider

the Iowa National Guard and retained a reserve commission after World War I. He was recalled to active duty last January as a lieutenant colonel and assigned to a station in the southwest Pacific. He was promoted to brigadier general on August 3.

WILLIAM J. SIMS, a salesman of the National Gypsum Co., Buffalo, N. Y., resigned early in 1942 to join the United States Marine Corps.

W. A. KETCHIN, secretary of the Ketchin Brick & Tile Co., Fort Lauderdale, Fla. (concrete products) is now in the Ferry Command, U. S. Army.

MAJ. SIDNEY A. MEWHIRTER, U.S.A., is a former employee of the Cia. de Cementos Portland Diamante Apulo, Colombia, S. A.

FIRST LIEUTENANT N. A. MOBERG, U.S.A., is former office manager of the Yakima Cement Products Co., Yakima, Wash.

GEORGE D. LOTT, president of the Palmetto Quarries Co., Columbia, S. C., has two sons, who are officers in his company, in the United States Army. CAPT. GEORGE D. LOTT, JR., vice-president and LIEUT. HAMILTON LOTT, chief engineer, are both in the Coast Artillery. Altogether the company has 15 employees in uniform.

LIEUT. NEAL R. FOSSEEN, United States Marine Corps, San Diego, Calif., base, is on leave from his regular job as president of the Washington Brick and Lime Co., Spokane, Wash.

MAJ. EDWARD J. MAGUIRE, United States Air Corps, was formerly assistant traffic manager of the Medusa Portland Cement Co., Cleveland, Ohio.

C. A. SANBORN, a salesman with the Lehigh Stone Co., Kankakee, Ill., is a machinists' mate, first class, "See and Bee" battalion, U. S. Navy, somewhere in the South Seas, building air fields and highways. He is a son of W. R. Sanborn, president of the company, and brother of Dan Sanborn, who is also active in the company.

LIEUT.-COL. FRANK J. BILLETER, Q.M.C., U.S.A., secretary-treasurer of the Indiana Gravel Co., Inc., Indianapolis, Ind., entered the service in December, 1940, as a major. He was



Lt. Col. Frank J. Billeter, Q.M.C., U.S.A.

ROCK PRODUCTS

## PERSONNEL

recently promoted to lieutenant-colonel, Quartermaster Corps, and at last report was in charge of the motor pool for the 5th Corps Area, with headquarters at Fort Hayes, Ohio. During his absence Lawrence E. Creek is serving as secretary-treasurer of the company. The company has two other employees in the army and one in the navy.

FRED N. WOODS, purchasing agent of the California Rock & Gravel Co., San Francisco, Calif., is in the United States Navy. B. E. Oliver is now sales manager and purchasing agent.

WALTER A. HAAS was elected a director of Pacific Coast Aggregates, Inc., San Francisco, Calif., replacing Major E. H. Heller, who resigned because he is now stationed in Boston.

R. E. ROSCOE, vice-president in charge of operations of Bessemer Limestone & Cement Co., Youngstown, Ohio, has been elected a member of the board of directors, succeeding Joseph G. Butler III, who resigned when he was commissioned a captain in the U. S. Army air forces.

PETER SHIBLEY OWENS, an employee of the Eastern Rock Products, Inc., Utica, N. Y., and son of H. V. Owens, the company president, is a gunner sergeant with General MacArthur's United States Air Forces somewhere in the South Pacific. Pete has passed his examinations for officers' training school, but at last reports was too



Peter S. Owens

busy with his work on the Japs to be released from active service. He is a graduate of Union College, class of 1939 and enlisted in the United States Air Corps in April, 1941.

E. H. BILLS, for a number of years in the sales department of the Columbia Quarry Co., St. Louis, Mo., handling agricultural limestone and fine products sales is now a second lieutenant in the Quartermasters Department of the U. S. Army at Oakland, Calif.

LIEUT. C. M. HUNTER, JR., assistant general manager, Pounding Mill Quarry Corp., Roanoke, Va., is one representative of the quarry industry in the famous United States Marine



1st Lt. C. M. Hunter, Jr., U.S.M.C.R.

Corps. He is a first lieutenant. His father is C. M. Hunter, vice-president of the company, which altogether has 15 in the armed services.

J. B. FORD, vice-president, Michigan Alkali Co., Detroit, Mich. (Huron and Wyandotte cement) is now in the United States Navy.

FRED F. BARTEL, who is well-known throughout the sand and gravel industry as Research Fellow of the National Sand & Gravel Association Research Foundation at the University of Maryland, is now in training at Chanute Field, Army Air Corps. He anticipates receiving his commission

as an officer in the ground forces of the Air Corps sometime in January. Mr. Bartel has contributed some out-



Fred F. Bartel

standing research work in the studies of the effects of aggregates on durability of concrete.

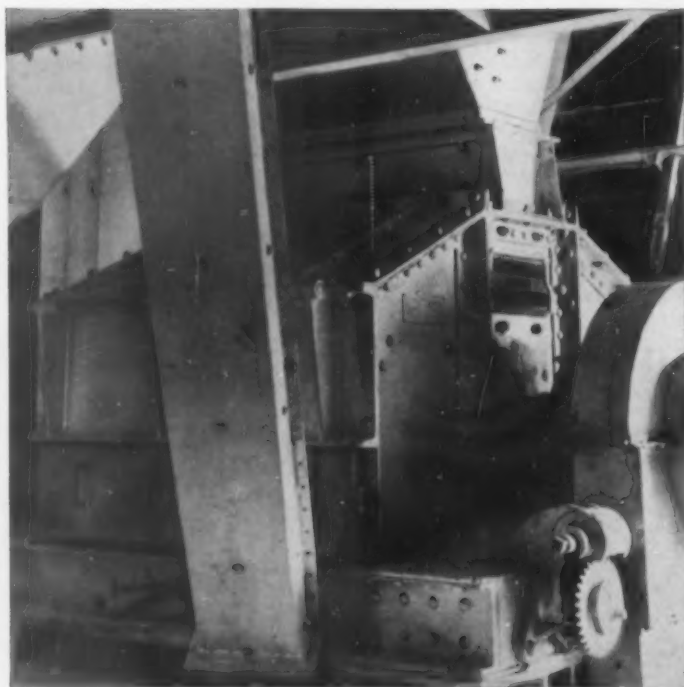
CLEMENT J. PIERSON, formerly president and owner of the Pierson Bros. Sand Corp., Milwaukee, Wis., has been graduated from recruit training at the Great Lakes Naval Training Station as honor man of his company. He was selected to attend one of the navy service schools.

C. P. ELGIN, owner and operator of Cedar Dolomite Products Co., Cedarville, Ohio, has been commissioned Captain in the U. S. Army and is now in training at Miami Beach, Fla. The crushed stone and agricultural limestone plant is being dismantled. It was once owned by C. C. Beam, of Melvin, Ohio, and later by Carter N. Abel. The quarry has been in operation for 70 years.

GEO. B. PHILLIPS, superintendent, Standard Lime and Stone Co., Martinsburg, W. Va., has entered the Navy. T. A. Cherry succeeds him.

PORTLAND CEMENT ASSOCIATION has lost a number of its engineering staff to the armed services. Typical, but probably not all, are the following: GEORGE D. HAYDEN, New York district office, now lieutenant, Civil Engineering Corps, U. S. Naval Reserve; T. D. SHIELDS, Abilene, Tex., district office, is captain, U. S. Army Air Corps.

# "PENNSYLVANIA"



## PENNSYLVANIA REVERSIBLE HAMMERMILL

performing the Secondary reduction on hard Cement-making Materials by smashing head-on impact between Hammer faces, Breakerplates and Duplex Adjustable Cages,—in alternate right and left-hand operation,—closed circuited with Vibrating Screen,—for product sizing which promotes efficient grinding.

This advanced crushing technique affords,—

**AUTOMATIC HAMMER TURNING**

**AUTOMATIC HAMMER AND CAGE BAR RESHARPENING**

**INCREASED CAPACITY PER FRAME SIZE**

**FINER AND MORE UNIFORM PRODUCT**

**SHARPLY CUT UPKEEP COST AND REDUCED POWER DEMAND**

**Complete Raw Side Crushing Equipment**

*Put Your Reduction Problems up to "Pennsylvania" Engineers*

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**"PENNSYLVANIA" REVERSIBLE IMPACTOR**  
preparing abrasive cement-making materials by impact crushing, for grinding mills, in modern Western Plant. Other services include impact reduction of Ores, Refractories, Fluxing Minerals, Road Chips, Aggregates, Gravel, etc. Patented. Bulletin 6000.



**"Pennsylvania" REVERSIBLE Hammermills**  
revolutionize Secondary and Fine Reductions for the Cement, Lime, Gypsum and Chemical Industries by making finer and more uniform products, at lower costs. Patented. Bulletin 1030.



**SUPER-PENNSTEEL Series Single Roll Crusher**  
for Primary and Secondary reductions of Fluxing Stone, Cement-Making Materials, Iron Ores and Gypsum Rock. One piece Steel Frame, double Safety Protection against Tramp Iron, low Upkeep Cost and unfailing Dependability. Bulletin 2004.

# STEELBUILT CRUSHERS

## PERSONNEL

NEW YORK TRAP ROCK CORP., New York City, has given up two of its young salesmen to the United States Navy—DEXTER BULLARD and WILSON P. FOSS, III. The latter is a son of the chairman of the board of direc-



Lt. Comdr. Dexter Bullard, U.S.N.

tors of the company, WILSON P. FOSS, Jr. Altogether the corporation has given over 50 men to the armed services.

SOUTHERN CEMENT CO., Birmingham, Ala., has supplied two commissioned officers to the armed services: LIEUT. W. J. CABANISS, U.S.N. (Procurement), and CAPT. C. W. WALTER, U.S.A. (Second Armored Division, Combat Force). Lieut. Cabaniss is secretary-treasurer of the company and Capt. Walter was its sales representative in Florida and Georgia. During Lieut. Cabaniss' absence, Mildred M. Thompson, promoted to assistant secretary and treasurer, is "keeping the home fires burning."

VOLUNTEER PORTLAND CEMENT CO., Knoxville, Tenn., has two of its office staff in the U. S. Army Air Corps, JOHN R. DRUMMY, assistant sales manager, and J. ROSS HANRAHAN, JR., son of the company president, who was an accountant. The company has over a score of employees in the armed services.

SUPERIOR STONE CO., Raleigh, N. C., has at least 11 men in the armed services, to whom the company is sending issues of ROCK PRODUCTS regularly. Incidentally, that's a fine idea, if you want to keep our soldiers in touch with the industries they ex-

pect to return to. The Superior Stone Co. list includes: W. T. Ragland, Jr., ensign, U. S. Navy; Godfrey Cheshire, Jr., lieutenant, j.g., U. S. Navy; James McKee, lieutenant, U. S. Army; L. R. Shuping, staff sergeant, U. S. Air Corps, and R. A. Shuping, corporal, who is overseas with an armored regiment.

NICKEL PLATE SAND AND GRAVEL CO., Fairview, Penn., has three truck drivers and a clerk in the U. S. Army.

CONSOLIDATED QUARRIES CORPORATION, Decatur, Ga., has 16 (on Nov. 13) employees in the armed services.

BLUE RIDGE TALC CO., Henry, Va., reports its chief chemist, R. W. WADE



Lt. Wilson P. Foss, III, U.S.N.

and its accountant, P. H. BARKER, together with two other employees are in the U. S. Army.

MELVIN STONE CO., Melvin, Ohio, has six employees in uniform.

OTTO LADWIG AND SONS, INC., Milwaukee, Wis. (crushed stone) has five employees in uniform.

ST. LOUIS MATERIAL & SUPPLY CO., St. Louis, Mo. (sand and gravel), has three employees in the armed services.

AMERICAN SAND AND GRAVEL CO., Hattiesburg, Miss., has 10 employees in uniform.

INDUSTRIAL SILICA CORP., Youngstown, Ohio, which is strictly an essential war industry, has 10 men in the uniformed services.

MEDUSA PORTLAND CEMENT CO., Cleveland, Ohio, in November, had 81 of its employees in the armed service. There had been up to that time two casualties.

GREEN BAG CEMENT CO. OF WEST VIRGINIA, Huntington, W. Va., reported six employees in uniform.

GIBSONBURG LIME PRODUCTS CO., Gibsonburg, Ohio, has 19 employees in the armed services.

ISLAND DOCK, INC., Kingston, N. Y., sand and gravel, concrete products has 14 employees in uniform.

CARBON LIMESTONE CO., Youngstown, Ohio, has 60 employees in the armed services.

LYNN SAND & STONE CO., Swampscott, Mass., has 18 men in the armed services.

BANKS STONE AND SAND CO., Wilkesbarre, Penn., has 27 employees in uniform.

BEDFORD HILLS CONCRETE PRODUCTS CORP., Bedford Hills, N. Y., reports three employees in the armed services.

PEORIA CONCRETE CONSTRUCTION CO., Peoria, Ill., ready mixed concrete, reports one employee in the armed services.

MAJ. L. GARRARD WILSON, assistant secretary, Central Rock Co., Lexington, Ky., is in the United States Army. He was recently promoted from captain to major. According to the in-



Maj. L. Garrard Wilson

signia on his coat lapel he is in the cavalry. H. L. SHEARER, chief engineer of the company, is also on leave of absence for engineering work on an army airport.

ROBERT R. MUSGROVE, secretary, Allegheny Silica Products Co., Buena Vista, Va., is in the Army, having volunteered early this year. Mr. Musgrove is a graduate of Virginia Polytechnic Institute.

SUBSCRIBERS who have informed us during the year that they were leaving their business connections to join the armed forces include: VINCENT CATES, technical engineer, Universal Atlas Cement Co., of Melrose, Mass.; H. W. CLARK, superintendent, Suburban Industries, Inc., Honesdale, Penn.; R. COCHRAN, crusher foreman, Pittsburgh Coke & Iron Co., Templeton, Penn.; H. M. DERICKSON, owner of a crusher stone operation, Stanton, Ky.; WM. M. JAKES, formerly chemist, Yosemite Portland Cement Co., Merced, Calif., now an ensign, U. S. Naval Reserve; NELSON W. KOPEK, materials testing engineer, Ford Motor Co. (cement), Detroit, Mich.; E. N. WOODWARD, quarry superintendent, Lone Star Cement Co., Chuckatuck, Va. There are probably others that our subscription department has failed to call the editors' attention to, but these are at least typical of the effect of the war on the personnel of the rock products industries. Numerous company executives explain that members of their management personnel are beyond military age. On the whole the executive staffs of producers in this industry seem to have been tapped rather lightly for military officers.



Walter B. Lenhart

Doubtless the industries have contributed their full proportion of enlisted men, although up to this time most of the rock products industries have been essential to the war effort—that is of course those that have operated at all. Many small operators have folded up, at least for the duration; and 1943 will probably see a much greater loss in this category.

MACHINERY AND EQUIPMENT men who have joined the colors are noted elsewhere in this issue—also of course very far from a complete list.

### Rock Products Own Personnel Changes

ROCK PRODUCTS' is proud to announce that one of its editors, Bror Nordberg, has been found more valu-



Bror Nordberg

able to the Chief of Ordnance of the United States War Department than he was to us, much as we shall miss him for the duration from our editorial staff. Bror has been with us for seven years and has traveled from one end of the country to the other several times; he has made many friends and acquaintances among our subscribers and advertisers. He will still be available for consultation by ourselves and his friends in the industry.

Bror is a civil engineering graduate of Northwestern University, and graduate engineers of military age, physically fit, are getting scarce. The Chief of Ordnance requested that we grant him a leave of absence, which naturally, has been done. At present, at least, his headquarters will remain in Chicago, and personal mail may be addressed to him c/o ROCK PRODUCTS.

Fortunately for ROCK PRODUCTS its service to readers, advertisers and friends will in no way suffer from

Bror Nordberg's temporary absence. To fill the gap we have persuaded Walter B. Lenhart to return to our editorial staff and to do some of the heavy field work Bror Nordberg formerly did. "Len" was with us from 1928 to 1932 as an associate editor, and there are many faithful Rock Products' readers who remember him.

Len also traveled the country extensively for ROCK PRODUCTS and was everywhere welcomed because he not only could write about operations, but is himself an experienced operator. He is a professional mining engineer who has superintended gypsum mines and plants, and has a wide practical acquaintance with all kinds of mineral industry operations.

For the particular job we have in mind for ROCK PRODUCTS' editorial staff in 1943, we believe Len is especially well fitted. We are going to analyze operations in our industries from a technical angle as only men familiar with mining practice can do. We believe that now is the time for stock-taking of rock products production and processing methods and for intelligent, readable discussions of how they may be improved to meet the coming post-war period, when producers and manufacturers will need all the technical assistance they can obtain to rehabilitate their plants for a period of fierce competition.

### After the War

MELVIN H. BAKER, president of the National Gypsum Co., Buffalo, N. Y., in a lecture before the University of Buffalo school of business administration, said: "America's post-war future holds the greatest opportunity for growth the world has ever known, but planning for the post-war opportunities is no job for theorists. There will be a great demand for everything both in this country and throughout the world. To support this demand the American people will have the necessary buying power, skill and plants in which to produce. Planning for the post-war world is a job for realists, for men who know the difficulties in organizing a program that will show a profit out of which to pay wages and capital. The thoroughness of such planning may well determine the soundness of the economic and political liberty which we will possess in the future."

DEVEREUX BACON, JR., has been appointed assistant director of sales for the Florida Portland Cement Co., with headquarters in Tampa, Fla.

ROCK PRODUCTS

# ROTARY KILNS

OUR ROTARY KILNS

in the

WAR PROGRAM

PLAY AN IMPORTANT PART  
IN THE MAKING OF

MAGNESIUM  
MANGANESE  
ALUMINUM  
DOLOMITE  
CEMENT  
ALKALI  
NICKEL  
LIME  
IRON  
TIN  
•



**F. L. SMIDTH & CO.**

60 EAST 42ND STREET

CEMENT ENGINEERING  
CEMENT MACHINERY

NEW YORK, N. Y.

## Manufacturers' Men in the War

**A** GAIN we have to apologize for our list being far from complete; first because we have included only such members of rock products ma-



Lt. j.g. B. P. Spann, U. S. Navy.

chinery manufacturers' personnel as are likely to be well-known to rock products plant operators; and, second, because probably we do not have any record of many who are now serving their country.

**GARDNER-DENVER Co.:** B. P. Spann, advertising manager of the company, has been commissioned a lieutenant, j.g. in the Supply Corps of the U. S. Naval Reserve. He is on leave of absence and will resume his duties after the war.



Carl F. Clausen

**F. L. SMIDTH & Co.:** CARL F. CLAUSEN, who was the company's engineer representative on the West Coast until November, 1941, is now a technical consultant, W.P.B., Building Materials Branch.

**COMBUSTION ENGINEERING Co., RAYMOND PULVERIZER DIVISION:** ALBERT I. EDWARDS is with the Bureau of Industrial Conservation, W.P.B.

**GENERAL ELECTRIC Co.:** CHARLES E. WILSON, former president, is vice-chairman, W.P.B., and numerous technical men have been loaned to the W.P.B. and other government services.

**CHAIN BELT Co.:** ARTHUR W. THOMAS, sales manager, construction machin-



A. W. Thomas

ery division, has been loaned to W. P.B. as a consultant for this division of industry.

**FULLER Co.:** LIEUT.-COL. KEMP ENGELHART is now with the U. S. Army Intelligence Service. He was assistant to the president of the company and one of its experts on flotation.

**GATES RUBBER Co.:** LIEUT. MARK T. GILKISON, U. S. Army Air Corps, was a sales engineer for the company.

**E. I. DU PONT DE NEMOURS & Co.:** NEIL O. JOHNSON, former explosives department technical representative, is with the U. S. Army Engineer Corps as First Lieutenant.

**ROBINS CONVEYING BELT Co.:** Major Maurice B. Bradley, formerly manager of the Cleveland office, has entered the Army. S. F. Knight is now man-



Maj. Maurice B. Bradley, U.S.A.

ager of both the Detroit and Cleveland offices. During the year R. W. Eichenberger and E. C. Salzman were elected vice-presidents and J. F. Meissner was elected vice-president.

**THORNTON TANDEM Co.:** S. F. Baker has returned to his duties as vice-president of the company after completing the Civilian Orientation Course presented by the Command

(Continued on page 96)

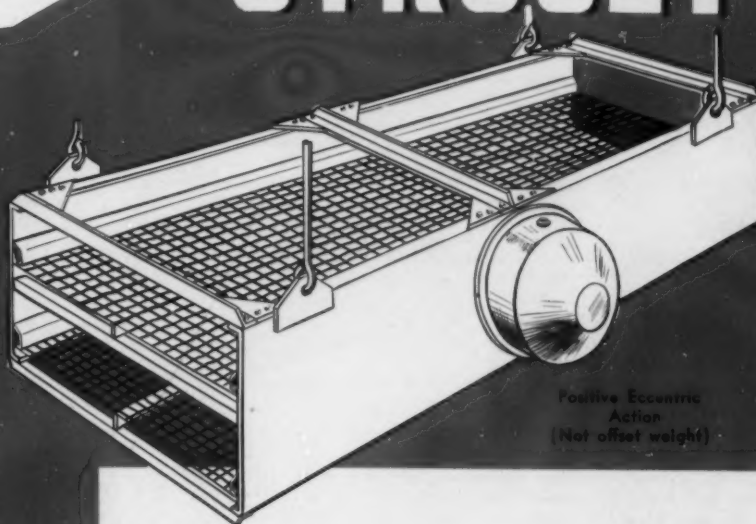


S. F. Baker

ROCK PRODUCTS

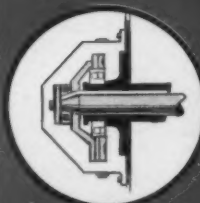
**Solve** YOUR  
SCREENING PROBLEMS  
*with*

# GYROSET



## OIL LUBRICATION

—Vibrator assembly is completely enclosed and all moving parts operate in a continuous bath of oil.



## FLOATING SHAFT

—one that is really full floating—it carries no radial load, therefore no bending.



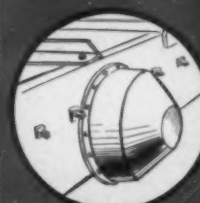
## STROKE ADJUSTMENT

—complete throw adjustments can be quickly made without special tools or parts.



## SCREEN CLOTHS

—can be easily and quickly changed—avoiding costly shut-downs.



## SAFETY

—built-in—all moving parts of vibrator assembly are fully enclosed—no exposed flywheels to catch the hands or clothing of operator.

**GYROSET** will efficiently grade or size your material at the lowest possible cost—not only is it popularly priced but economical in operation as well.

**GYROSET** Positive Control is the secret of its amazing performance enabling a light vibration for fine material or a coarse, heavy throw for large material either wet or dry.

**GYROSET** can be adjusted very readily to exactly fit the product in hand and do it easily and quickly without special tools.

**GYROSET** is available in one, two or three decks; open, semi-enclosed or fully enclosed models.

**GYROSET** arranged for suspension or base mounting.

**GYROSET** is produced by men who have specialized in the design and manufacture of vibrating screens.

Write today for Bulletin No. 939.

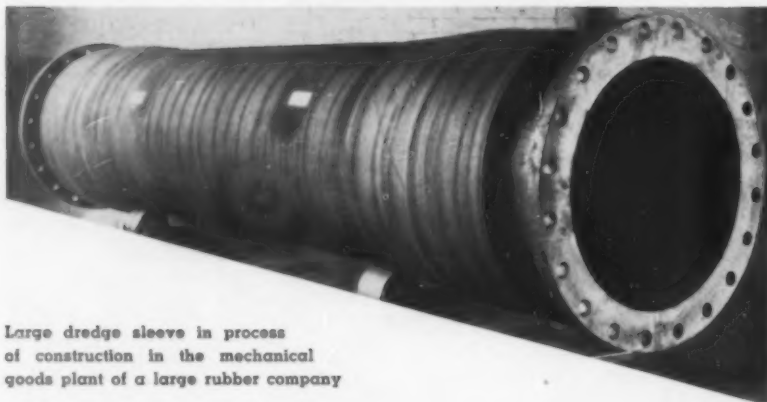
**PRODUCTIVE EQUIPMENT CORP.**

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MAKERS OF THE  
FAMOUS "JIGGER"  
"SELECTRO" MUD HOG  
SCREENS.

## Rubber Problems



Large dredge sleeve in process of construction in the mechanical goods plant of a large rubber company

By NATHAN C. ROCKWOOD

Prospects indicate plenty of synthetic rubber tires will be available in 1944, but recapping and reclaimed rubber must be depended upon for tires, conveyors, etc., in 1943

IT DID NOT REQUIRE nationwide gasoline rationing to convince rock products operators that rubber is getting scarce and difficult to replace in the thousand-and-one uses where these operators had learned it served better than something else. Every year has seen an expanding use of mechanical rubber goods. This country was using more than half of all the natural rubber produced, when the Japs cut off 90 percent of the sources of all natural rubber.

W. L. Finger, of the Rubber Section, O.P.M. (predecessor of W.P.B.) once said: "The rubber industry is for the most part a service industry, providing indispensable parts for the successful operation of all American industries. These vital rubber parts run through every essential industry like a dominant thread pattern through a carpet. Without rubber our various systems of transportation could not function, our industrial plants could not run, our communication system would break down, our health could not be effectively protected, our shoe and clothing industries would be crippled."

The situation today is probably such that little or no pure gum natural rubber will be released for any other than military purposes. Reclaimed rubber and synthetic rubber

will perhaps be available in increasing quantities. As users of a variety of rubber products, operators in the rock products industries very likely want to know something about the prospects of replacing tires, conveyor belts, V-belt drives, etc., with products made of reclaimed and syn-

thetic rubbers. Also, what will be the situation when the Japs are finally licked and driven out of the rubber plantation countries?

### Tire Situation

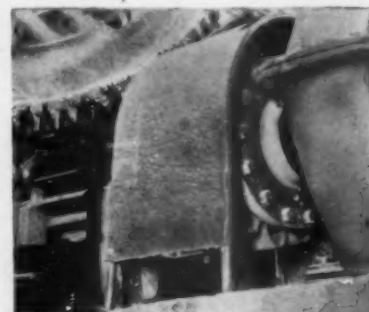
Of course, the largest use of rubber is for tires—and the rock products industry is a large user of tires, many of them very large truck tires. Tires have been made of synthetic rubber on an experimental scale and are being made now of reclaimed rubber. Although for some purposes synthetic rubbers are superior to natural rubber, up to the present time there is no substitute equal to the best grade natural rubber for tires. Of course tires made of reclaimed rubber are of much lower quality than made from gum rubber.

In his testimony before a congressional investigating committee the last part of November, Rubber Administrator William M. Jeffers stated that normally, 48 million tires are required annually. Of the 30 million for 1943, he said, about 13 million will come from new tires in inventory and usable tires acquired by the Government under the idle tire purchase program. Some 6 million will be new tires made of reclaimed rubber and the remaining 11 million will be retreads or recaps on existing carcasses. Mr. Jeffers reviewed the rubber statistics and the synthetic program and declared that by spring of 1944, if all goes well, sufficient synthetic will be coming into production to provide for both military and civilian requirements.

Lack of materials is hampering

construction of synthetic rubber manufacturing plants at the present time. No more than 50,000 tons of synthetic rubber will be available before the middle of 1943, Mr. Jeffers said. "This production should rise rapidly in the last six months of the year, but we must take every safeguard to keep our stockpile of crude as high as possible against any of the many things that may happen to delay the output of synthetic rubber in usable form," he declared.

Although Mr. Jeffers did not say so, it appears to be fairly well known that delay in synthetic rubber production is also caused by Vice-President Wallace's speeches and attitude to the effect that such production must be of a temporary nature only; that we owe it to our foreign neighbors to buy natural rubber again as soon as it is available. Mr. Wallace, as chairman of the Board of Economic Warfare, can exert a powerful



Shock and vibration are dampened out by the use of a patented rubber ring type drive turning a rock dryer in a cement mill

influence; so it is not surprising that some of the private initiative to engage in synthetic rubber research and production is dulled by his attitude.

It is typical of American approach to such problems that research on synthetic rubber has been going on for several years at a time when a plentiful supply of natural rubber was available. Our chemists and research men were not seeking merely a substitute for rubber, as was the case in Germany and Russia; they were seeking from the start a synthetic material that would be superior to rubber for certain purposes. Their research was not devoted to finding a material that would be superior to rubber for tires, until very recently. Most of us have enough faith in American brains to believe they will find it.

Much has been published about developing sources of crude rubber in South and Central America, and from plants that can be grown in the United States, but experts know it would be 25 or 30 years before any appreciable tonnage could be had from these sources. Our main reliance must be on synthetic rubbers, unless we succeed soon in driving the Japs out of the East Indies, and they are considerate enough not to destroy the rubber plantations before they leave.

Some of our problems would be solved if rubber could be reclaimed indefinitely. While it can be used more than once, rubber loses its "bounce" eventually and its quality is reduced considerably with each reclaiming.

Reclaimed rubber is, however, our



One-quarter inch rubber belting is used on head pulleys of long conveyors for conveying dry materials to prevent wear and slippage which results in loss of power. For wet conveying a section of belt with the rubber covering removed to expose the duck is employed

greatest emergency source. Operating at full capacity, the industry now is reclaiming at the rate of 315,000 tons a year. Experts disagree on how much this figure can be increased. It is indicated that something in the neighborhood of 500,000 tons of scrap rubber could be collected in the United States annually for a time. This would produce about 425,000 tons in reclaimed rubber, but reclaiming plants would have to be expanded to take care of any such amount.

"Bounce," or stretch, is the quality which distinguishes natural rubber from all substitutes up to this time. Therefore, for any use where this quality is essential, reclaimed rubber and synthetic rubber would not be

so good as new natural rubber. Where rubber has been used merely because it was a cheap plastic, there are probably substitutes of equal value or better. As recently as the September convention of the American Chemical Society, it was reported that two researchers had discovered the cause of bounce in natural rubber.

The result will be an improvement in the liveliness of synthetic rubber, it was indicated by Hubert M. James, Purdue University, and Eugene Guth, University of Notre Dame. This is important, they explained, because a rubber ball of butyl (synthetic) rubber, for instance, has hardly any bounce at all at room temperature, but is as lively as natural rubber at 100 deg. C.

Knowing the mechanics of what makes rubber bounce will make possible extended use of synthetic rubber at ordinary temperatures, as in tires, the report stated. The explanation is found in the molecular structure of rubber, which is normally coiled-up, but is lengthened into long, flexible molecules when stretched. The "snap back" when the stress is released is similar to the force which causes gas to expand when the pressure is released, the paper stated.

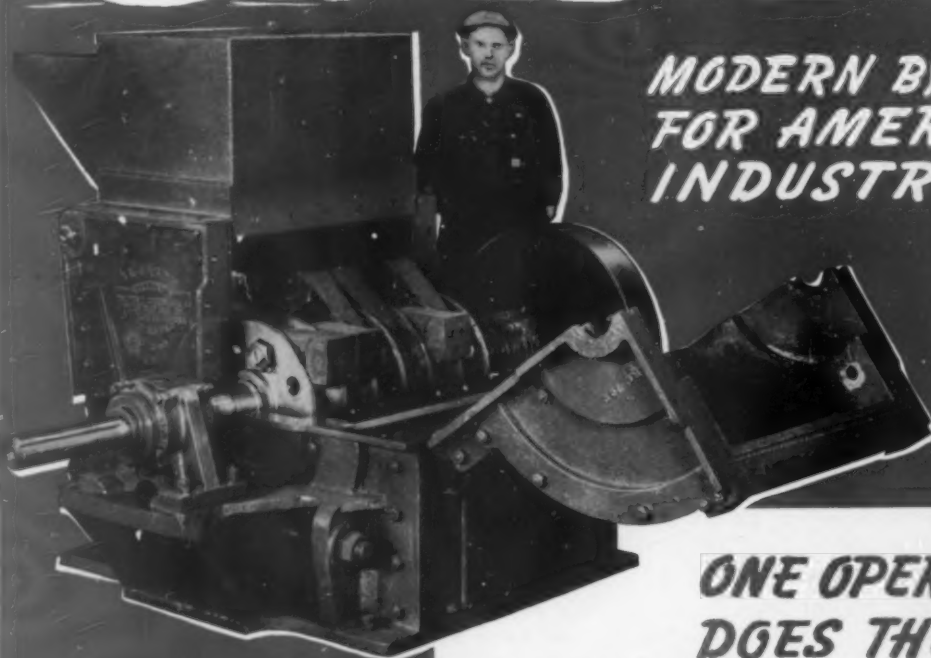
In many of the important industrial uses for rubber the requirements are much the same as for tire treads, and hence the only available substitutes for the natural product are the butadiene rubbers and the neoprenes. This is true of such important tonnage consumers of crude rubber as power transmission and conveyor belts, engine mountings,

(Continued on page 84)



Close-up of rubber-lined chutes for loading barges from dredge

# SPEED



**MODERN BY-WORD  
FOR AMERICAN  
INDUSTRY.....**

Open view of the  
Williams "Slugger"  
Crusher showing  
heavy duty hammers,  
liners and discs.

## ONE OPERATION DOES THE JOB

**S**PEED plus satisfactory work is essential in America today. Along these lines the Williams "Slugger" Crusher and Pulverizer now makes it possible to crush large pieces of stone weighing from 75 to 100 pounds to  $1\frac{1}{4}$ ",  $\frac{3}{4}$ " or agricultural limestone in One Operation. This not only eliminates costly sledging but also does away with the unnecessary expense of a primary crusher.

The "Slugger" represents the most advanced type of crushing equipment on the market today, and with seven sizes to choose from producing from 4 to 30 tons per hour, every producer whether large or small can now afford to install a Williams.

### Outstanding "Slugger" Features

- **MANGANESE STEEL HAMMERS.** Heavy Duty Slug end Hammers are standard equipment in the "Slugger".
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- **ELECTRIC STEEL FRONT END.** The part which holds the breaker plate is electric steel casting— $3\frac{1}{2}$  times stronger than cast iron.
- **COVER LINERS 1" THICK.** Manganese steel liners.
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- **SEVEN SIZES.** 30 to 150 horsepower, stationary or portable models.

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### WILLIAMS FINE GRINDING EQUIPMENT WITH AIR SEPARATION



For faster, more efficient fine grinding of limestone, lime, coal, etc., there is a Williams Roller Mill with Air Separator to fit your requirements. Finenesses from 100 to 400 mesh.

Williams also builds Impact Mills with Air Separation; Mechanical Air Separators for classifying fine ground material or taking the fines out of dry material.

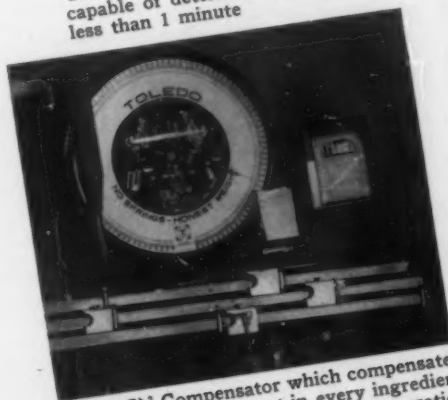


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The (SC)<sup>2</sup> Compensator which compensates for the moisture content in every ingredient and graphically records its every operation

Start now to improve your competitive position

## Sell Quality Concrete

(SC)<sup>2</sup> Precision Control will enable you to produce

## Better Concrete at a Lower Cost

Without investing in expensive new equipment it will help you to hold and extend your market

(SC)<sup>2</sup> Precision Control will give you

**A MOISTURE DETERMINATION**, accurate to  $\frac{1}{4}\%$  by weight, made in one minute; one for every batch when necessary.

**AUTOMATIC COMPENSATION**, for all ingredients, for every change in moisture content of aggregates. Delivers not only the correct total quantity of water but also the correct DRY weight of each aggregate within close tolerances.

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**AN AUTOMATIC GRAPHIC RECORD**, showing the delivered weight of all ingredients, and the moisture compensation made in each. An invaluable protection to both buyer and seller of concrete and a dependable aid to inspectors and engineers.

**(SC)<sup>2</sup> CONTROL** is used in progressive concrete manufacturing plants. Its precision mix assures rigid adherence to the engineer's specifications and produces remarkable uniformity.

Send for our booklet, "PROFITS IN CONCRETE" and let us show you what (SC)<sup>2</sup> can do for your plant.

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SCIENTIFIC



CONCRETE



is to concrete as sterling is to silver

## Rubber Conservation

(Continued from page 81)

and, in general, products that are subjected in service to severe mechanical stresses or to high temperatures.

### Relative Properties

In a booklet entitled "Rubber Guide Book for American War Industries," issued in July, 1942, by The B. F. Goodrich Co., comparisons are made between rubber, Ameripol, Koroseal and reclaimed rubber. This booklet should be in the hands of all interested in the solution of the rubber

Code No. Material	AMERIPOL—NEOPRENE—RUBBER COMPARISON						
	M-2260 Ameri- pol	M-2284 Ameri- pol	M-2285 Ameri- pol	M-2286 Ameri- pol	M-2318 Ameri- pol	M-382 Neo- prene	M-2238 Rubber
Durometer Hardness . . .	90	70	60	50	80	75	60
Tensile Strength . . . . .	1200 lbs.	1500 lbs.	1200 lbs.	1000 lbs.	1400 lbs.	1500 lbs.	3500 lbs.
Elongation . . . . .	120%	200%	260%	240%	180%	150%	550%
Elastometer Reading . . .	45	80	100	100	50	75	90
a. 50% Comp. Set. . . . .	7.5%	5%	5%	6%	6%	15.3%	10.5%
b. 100% Tension Set. . . .	4.5%	3.1%	3.1%	1.6%	3.1%	1.6%	0.63%
c. 200% Tension Set. . . . .	12.5%	12.5%	5.0%	3.1%	3.1%	3.1%	2.5%

shortage problem. Ameripol is the tradename of a synthetic rubber which is claimed to have the following physical properties: flexibility at sub-zero temperatures, low oil absorption, long life, non-corrosive to metals. It cannot be used as a pure

gumlike rubber, where tensile strength is required; it is slightly heavier than rubber; the elasticity of Ameripol compounds is lower than corresponding rubber compounds; elasticity is the measure of quickness of recovery after distortion; its tear resistance is somewhat inferior to that of the best compounds of natural rubber; it has much better resistance to oils than rubber, and it has good heat resistance; it becomes stiffer at subzero temperatures but recovers pliability when temperature rises. Ameripol is slightly superior to natural rubber in resistance to cracking on exposure to sun light and ozone (oxygen) and its resistance to aging is superior to rubber.

Weather and sunshine are the chief natural enemies of conveyor belts in the rock products industry, so in nearly all respects but the tendency to become stiff at low temperatures, perhaps this synthetic rubber is as good as natural rubber. It is, at present of course, more costly than natural rubber. It has been used to some extent for tires and is said to serve about as well as rubber.

The preceding table from the aforementioned booklet is interesting.

It is readily seen that in tensile strength and elongation, these and other synthetic rubbers have a long ways to go. How important these properties are for purposes other than for making tires remains to be seen.

Neoprene in the above tabulation is the synthetic rubber developed by E. I. duPont de Nemours & Co. and has been used for several years for a variety of purposes. It is of special interest to the limestone quarry industry because the basic materials from which it is made are coal, limestone and salt. The coal and limestone are converted to calcium carbide and the rubber processing starts with acetylene from the calcium carbide. If made on a large scale much limestone would be required and there would remain as a byproduct much calcium hydrate or hydrated lime. The principal other types of synthetic rubber are made from petroleum, alcohol, or tar.

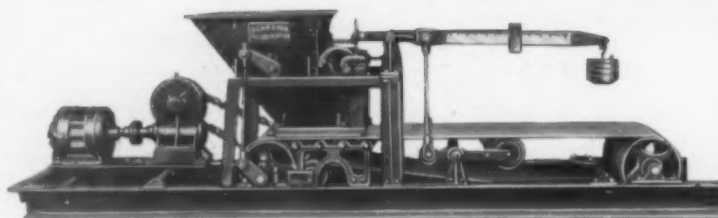
The three types of synthetic rubber best known are the Buna, the Buna S and the Buna N. All three spring

(Continued on page 86)

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## SCHAFFER POIDOMETER CO.

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# WIRE ROPE

## Economizing On Wire Rope

Digest of many expert opinions  
on increasing life

By NATHAN C. ROCKWOOD

PROBABLY THE ROCK PRODUCTS INDUSTRIES "expend" more steel in their use of wire rope than in any other operation. For worn-out wire rope has very little value except as scrap, in spite of the fact that it is made of the best grades of steel and represents a considerable fabrication cost. Hence, under present conditions, it is most desirable that every bit of useful life be had from every length of wire rope.

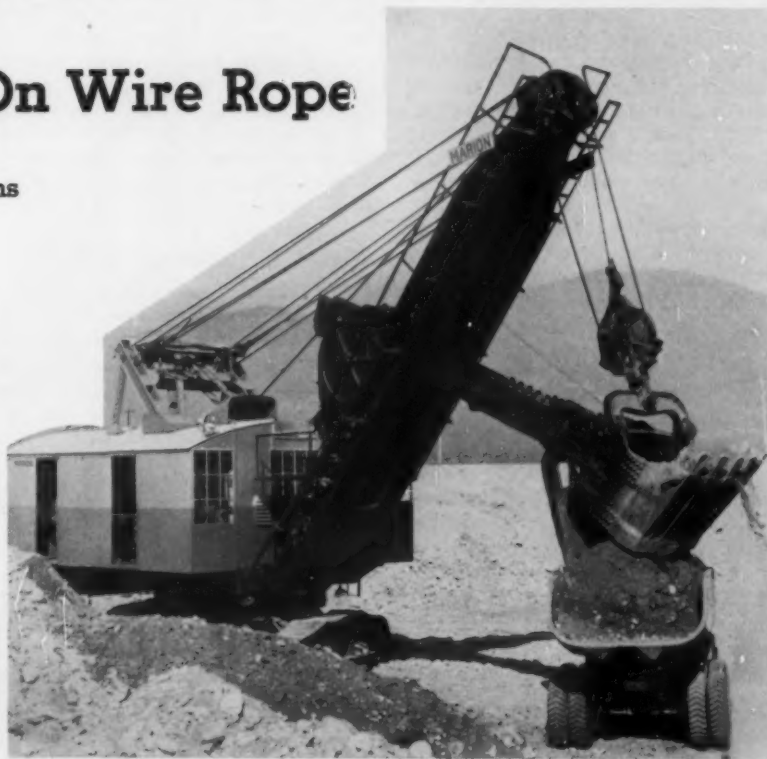
There has been so much current literature about the use and care of wire rope that one hesitates to contribute anything more. Yet, it is conceivable that through a careful review of what has already been published we may be able to garner the most emphasized points and omit much of the accessory material.

### Causes of Failure

Wire rope fails or wears out in service from bending fatigue (breaking the wire strands), abrasion, corrosion, over-stressing, etc. To select the proper type of rope for the job is the *most important factor*. For example, a rope for dragline bucket digging in gravel, whose life is normally a matter of days, need not be guarded against corrosion nor provided with lubrication beyond that supplied in manufacture.

The qualities needed in this particular instance are resistance to abrasion and flexibility. But these are opposing qualities, since resistance to abrasion means hardness in the steel wire strands, and hardness and flexibility don't ordinarily go together. Moreover, the type of rope best designed to resist abrasion, is one with large size (diameter) wire strands, but large size wire and flexibility do not go together either.

The less flexible the wire rope, the



Typical example of wire rope use subject to heavy wear is to be found in shovels, draglines, and other material handling equipment

larger diameter sheaves and drums required. Since failure by fatigue is the commonest cause, which means constant flexing beyond the limit the rope was designed to take, it does no good to select a rope whose abrasive resistance will far outlast its fatigue resistance. If the sheaves and drums won't permit enlarged diameter replacements, it may be better to select your rope to fit the drums than to select it for some other quality than its flexibility.

Passing over sheaves and drums of too small diameter, however, is not the only cause of wire rope failure. A vibrating or whipping cable is also subject to constantly reversing stresses, and it is this that causes fatigue failures. Hence, even though you have installed over-size sheaves or drums, the cable may still show failure from fatigue. This is only one example of the desirability of really studying your installation.

It is highly important to find out what causes the failure of the wire rope in your particular installation. This may be based on your own observation and experience, or on that of a superintendent, foreman, or wire rope expert. Probably, in normal

times, it is worth while to experiment with different types of rope for each particular installation, in order to find the most economical in the long run. Or perhaps, under present war conditions, you can not obtain the types you have been accustomed to using and have to take what you can get. In that case you also have an opportunity to study the service given and gain valuable knowledge for future purchases.

To be able to profit from experience and observation, of course, the user should be familiar with the various types of strand construction for wire rope. There are a dozen handbooks on wire rope available for the asking from the various wire rope manufacturers; and illustrations of typical wire rope construction have been shown in Rock Products and practically every other periodical serving users of wire rope.

Selection of the size of the rope is only a preliminary step. We can't do better in emphasizing this than to quote from the advertisement of one of the important wire-rope manufacturers: "You're sure of the size—it's to be  $\frac{3}{4}$ -in. wire rope. Then what? Is the rope to be used for hoisting

steel girders or for towing a log raft? For operating an elevator or a power shovel? For cable tool drilling or for pile driving? For guying a tower or mooring a vessel? For operating an incline or a dredge? Is it for swing line, drag line, boom line, tag line, closing line, tight line, slack line, choker, sling? How many strands? How many wires per strand? Hemp or wire center? Lang lay or regular lay? Right lay, left lay, or alternate lay? Non-rotating? Preformed or standard rope? Plow steel? Cast steel? Iron? Galvanized?"

It is not proposed here to repeat all the suggestions for making your selection of wire rope, which are so readily available from these manufacturers' handbooks. They agree fairly well on the sizes and types to use for various purposes, on the size of sheaves, the importance of preventing excessive fleet angles when winding on a drum or threading a sheave or pulley, the avoidance of sheaves with too large or too small grooves, of worn sheaves, drums, etc. It is only suggested the users really study these manufacturers' handbooks and make use of the information available there.

In normal times perhaps one could

afford to be wasteful. It is not so now. It is not only patriotic, but scarcity makes it essential, to get the most possible life from every piece of equipment operated in civilian industry. It is not desirable to risk accidents and loss of life through using worn out cable, but it is highly desirable that all operators make use of available information on proper lubrication, care and maintenance of wire rope.

### Raise Fluorspar Prices

TO STIMULATE production, the OPA has announced an increase in prices. New base ceiling prices range from \$25 to \$28 a short ton, according to its calcium fluoride and silica content, compared with \$23 to \$25 for top-grade fluorspar previously paid. Ceiling prices also have been established for acid grade fluorspar, except in the Illinois-Kentucky district. The new prices are based upon \$32 a short ton for material with a minimum calcium fluoride content of 97½ percent and a maximum silica content of 1½ percent, but are subject to freight adjustments resulting f.o.b. mine prices are in line with the level of maximum prices heretofore established individually for each producer.

### Rubber Conservation

(Continued from page 84)

from butadiene, a hydrocarbon which may be obtained, as stated, from almost any natural or artificial hydrocarbon. They are merely different polymers with a variety of "modifying agents" such as sulphur, chlorine, sodium, etc. A polymer means molecules of the same chemical elements arranged in different kinds of strings.

It must be remembered that much of the experimental work on synthetic rubbers started with a vast knowledge on corresponding natural rubbers. Since the synthetic rubbers are not natural rubber, and the variety of synthetic rubbers already known is considerable, it can be readily appreciated that the number of ways of compounding synthetic rubbers for special properties is practically infinite. Certainly it will result in time in synthetic rubbers better adapted to all uses than natural rubber. So, whether the Japs give up the East Indies rubber plantations or not, or whether Vice-President Wallace has his way or not, this country seems headed for a great new industry in which rock products operators have a definite interest both as users of the product and as suppliers of an important raw material.



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CAR PULLERS  
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FEEDERS  
GRINDERS  
IDLERS (Belt)  
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TRANSMISSION MACHINERY

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WAYTROLS



Jeffrey equipment and plant engineering cover the entire stone products industry . . . sand and gravel, crushed stone and cement. Equipment provides long service and maximum economy. Our rich experience is at your disposal.

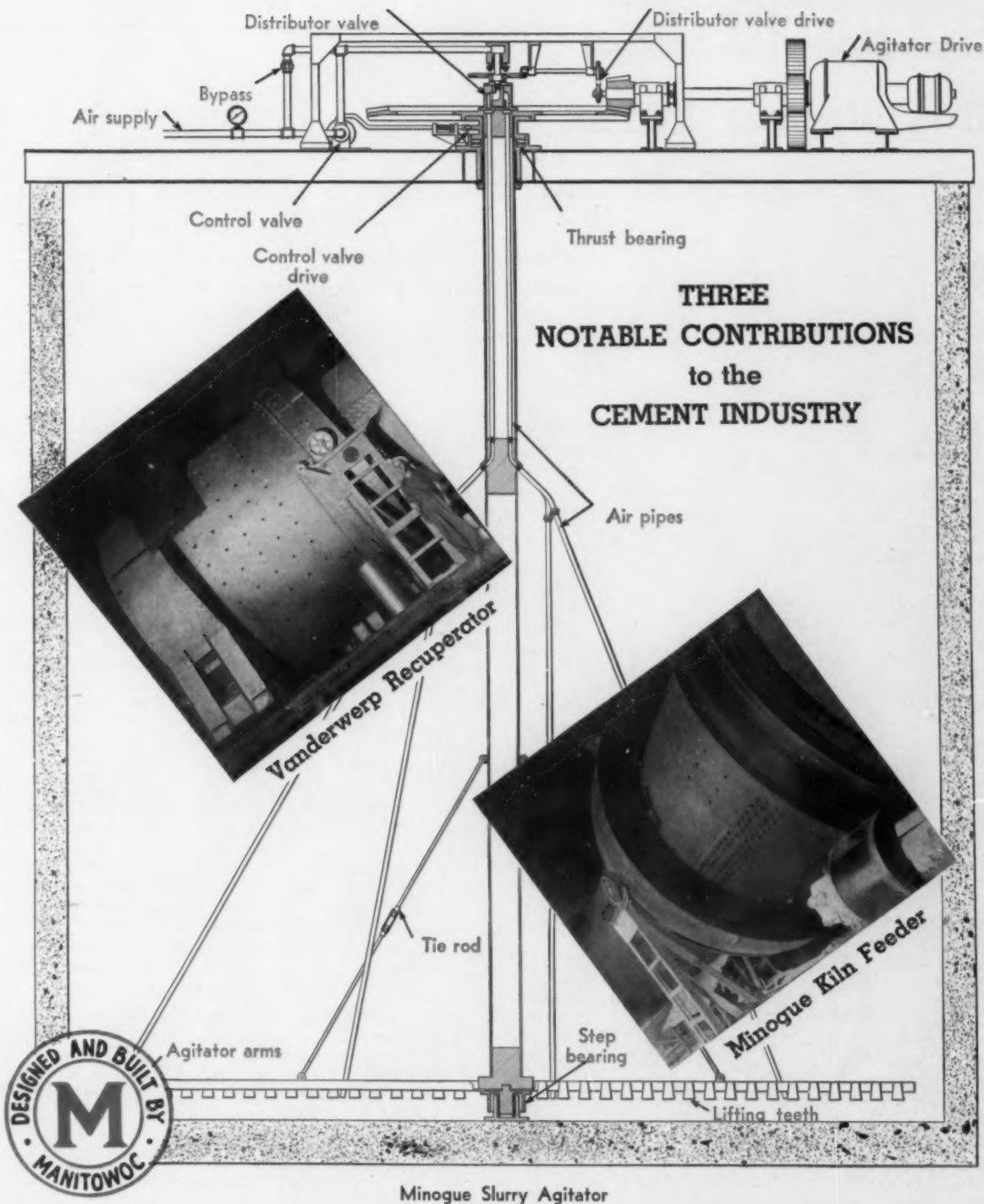
### THE JEFFREY MANUFACTURING COMPANY

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	Milwaukee	



Jeffrey bucket elevator (heavy duty type) and belt conveyor are shown at left. They are handling crushed stone in a large quarry operation. Jeffrey units will speed up schedules—will soon pay for themselves.



## MANITOWOC ENGINEERING WORKS

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131 E. Wacker Drive

# MAINTENANCE

## Buy Repair Parts

By NATHAN C. ROCKWOOD

## From Manufacturers That Pioneer

**M**OST MANUFACTURERS of the machinery and equipment used in the rock products industries are engaged 75 to 100 percent in making war products. Their repair and maintenance parts business remains about their only contact with many of their old customers. Under the new setup of the Mining Division of the War Production Board, repair and maintenance parts for the average operator will be supplied through jobbers, in order to simplify and coordinate this business and reduce the number of forms to be filled out by the rock products operator.

Thus, it is more important than ever, both to the manufacturer of machinery and the rock products producer, that the rock products producer insist on getting genuine parts, made either by the original manufacturer or his licensee. It is important to the manufacturer because he thus maintains a contact with the industries he serves and is in a better position to revise the design of the part, or change the materials used in its manufacture, or to work for greater perfection of the machine as a whole. It is important to the rock products producer, because much progress and lower costs in production of his own product have come from improvements in the machinery and equipment that he uses. The bond between the two has been close; the experience of the producer has added much to the perfection of the machine; it must not be altogether lost in the confusion of present war economy.

There is another angle to this business which present conditions have changed. In general the manufacturer has had very little control over the conditions under which the customer uses his equipment, and even less to say in respect to the care with which it is used, the lubrication, and the periodic repair to which any piece of machinery is entitled. The result has been that maintenance has varied widely among different users, and premature failures due to severe usage or abuse frequently have been the basis for requests on the part of the customer

**Original manufacturer of machine is constantly trying to perfect it—you, the user, can help and profit by buying parts from him**

for gratis replacements. The fierce competition between manufacturers often led to unbusiness-like handling of such claims, and many requests were granted as a matter of policy. Obviously, such practices are out, at least for the duration; but the manufacturer is willing and anxious to be consulted, and is ready to make recommendations for maintenance and lubrication which would be invaluable to the customer if he would freely consult the manufacturer and use the advice he is able to obtain.

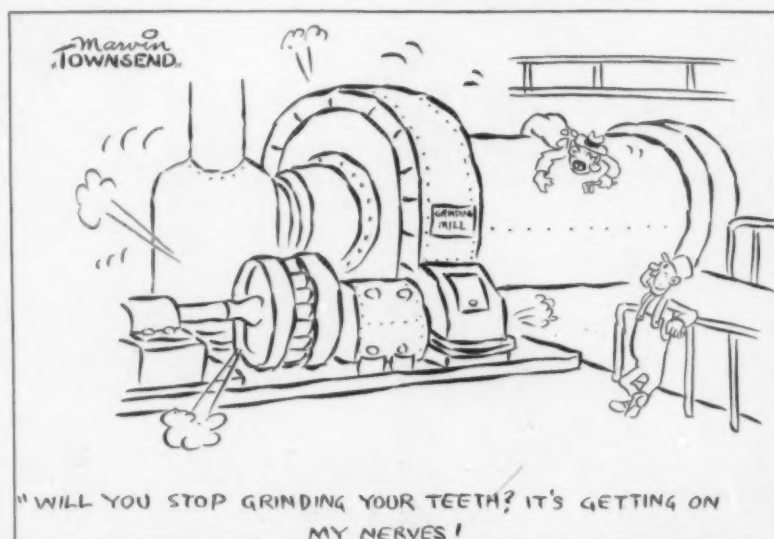
Such consultation also would be very helpful to the manufacturer in perfecting the part or the machine to make it give better service and last longer. The research and development departments of most manufacturers are busy even now, planning for the post-war period, and probably all of them are anxious to manufacture still better machinery. Some manufacturers hesitate to announce improvements in their machines, which are constantly being made, for the reason that some customers would feel entitled to replace-

ments on the basis that the manufacturer had developed something better after the customer had purchased his present machine in good faith.

### The Case of Rock Drills

Instead of reviewing the whole field of rock products production, we will take a specific instance of a very widely used piece of equipment—the rock drill. Any reader may substitute some other machine or piece of equipment, and the text would apply just as well. This information was furnished us by a manufacturer of rock drills, but it is probably better that we present it here anonymously.

The demand by operators for increased speed in drilling rock, has resulted in marked competition among the six leading manufacturers of rock drills in the United States. The highly competitive nature of the business has brought about rapid strides in performance, the benefits of which have accrued in large part to the user of the product. Manu-



# RAYMOND Low Side ROLLER MILL For Today's Big PRODUCTION

Are you planning a major expansion in your plant capacity?

Then consider the advantages of the modern Raymond Low Side Roller Mill . . . which not only gives high output per machine, up to 40 tons per hour in the Super Mill sizes . . . but also assures an extra low power ratio per ton of pulverized product.

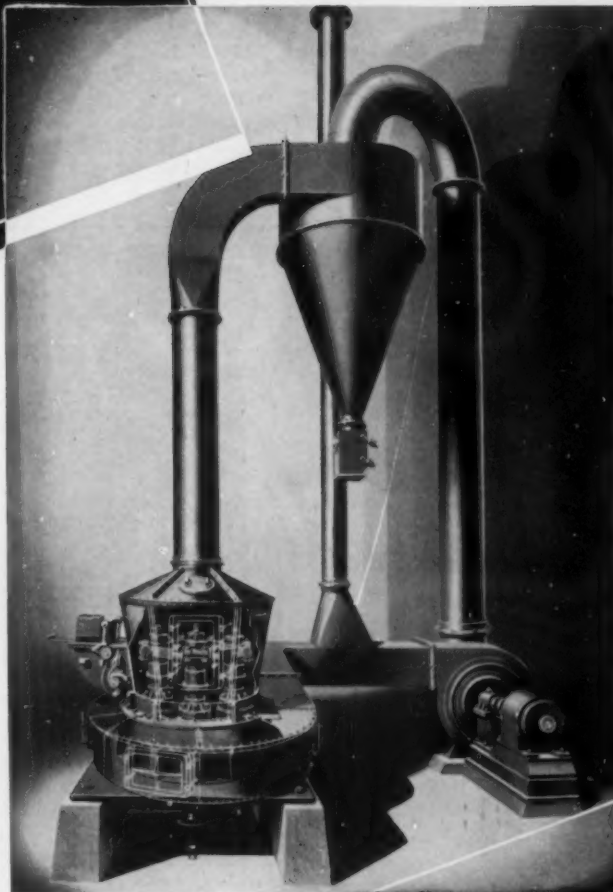
It has the new type spider vanes, revolving in the top of the grinding chamber, which are effective in obtaining product uniformity without sacrifice of capacity. Pneumatic feed control, which maintains a maximum load on the mill at all times, is another Raymond feature.

Self-lubricating oil journals, high grade bearings and finely balanced construction, all contribute to long service life, and help reduce operating and maintenance costs.

• • •

The Low Side Roller Mill is economically adapted for pulverizing gypsum, limestone, barytes, bauxite, bentonite, clay, phosphate rock and similar non-metallic minerals to commercial fineness. It may be used for drying and grinding in *one* operation by introducing heated air into the mill system for evaporating small quantities of surface moisture from the material.

The High Side Roller Mill, built on the same principle as the Low Side Mill but with a double cone separator (or whizzer separator), is recommended for extreme fine grinding up to 99.99% minus 325- mesh or better. Tell us the details of your problem, and our engineers will advise you on the proper equipment to use.



An Economical  
Producer for  
materials pulverized  
to medium fineness from  
60% to 95% minus 100-mesh

Write for Catalog No. 34 for Low Side Mills or Catalog No. 51 for High Side Roller Mills.

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COMBUSTION ENGINEERING COMPANY, INC.  
1307 North Branch Street CHICAGO  
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## Maintenance

(Continued from page 88)

facturers must keep pace or they can lose ground rapidly.

Although rock drill manufacturers have been collecting technical data on rock drill design for many years, it is a fact that rock drill development remains an experimental science in which "cut and try" occupies a more important place than formulae and formulae applies to a very limited extent.

To keep in step with the rapid advancement in the art, it is neces-

sary that the manufacturer maintain a corps of designers, draftsmen, patent attorneys, and machinists skilled in the necessary experimental work, and this staff must be kept intact whether business is good or bad.

New ideas are first laid out on the drawing board and if an idea looks good, if there is no serious patent conflict with existing designs, and if sales possibilities seem to justify it, an experimental machine is designed and is custom-built in a special department. These experimental machines are unavoidably expensive since they must be made by

the highest paid machinists skilled and experienced in this type of work, and without the aid of dies, fixtures, or special tools.

The experimental machine is given preliminary tests and if it shows promise a long period of test work is undertaken to bring it to maximum performance. At least two manufacturers maintain their own proving grounds to duplicate actual operating conditions approximating those in the field.

Fifteen or twenty experimental machines may be built for each model accepted by the sales department for production. Every drill manufacturer has his morgue—a collection of experimental models which for various reasons have never been permitted to reach the production stage.

### Constant Striving to Reduce Maintenance

The next step is to bring out weaknesses that might lead to high maintenance, by running exhaustive destruction tests in a special laboratory. These tests consist of operating at high pressures against steel blocks with an operator in constant attendance. This extremely severe service develops failures much more rapidly than normal operation and is an invaluable guide in the selection of proper material and in the development of correct heat treatment to insure maximum life in the production model.

After everything possible in the development of maximum performance and reliability has been accomplished with the manufacturer's own facilities, weaknesses may still be present which only can be brought to the surface by placing some machines in the hands of actual users and several copies are then built for actual operation in the field under widely varying conditions. If this field-testing shows promise, improvements which may have been suggested by it are incorporated in the design and preparation is made for quantity production and sale—provided the design is practical for quantity production and if the potential market seems to warrant it.

Absolute interchangeability of parts is of the utmost importance to the user and favorable costs are important to the manufacturer. To secure absolute interchangeability and favorable costs, ingenious dies, tools, jigs, and fixtures are designed and built, and the machine goes into production. The cost of "tooling up" for production can range from \$15,000 to \$35,000 per model. From

(Continued on page 92)

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**C**OMpletely control the flow of any size material from storage bins, hoppers or open-dump chutes to crushers, conveyors, screens, etc. Low in maintenance and power consumption. Furnished in sizes to suit your operation. Send full particulars for recommendations.

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## ROSS FEEDERS

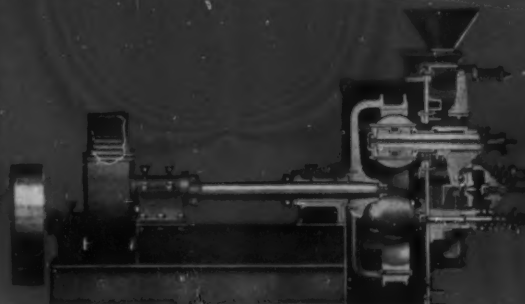
AN ARMY OF  
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STURTEVANT  
AIR SEPARATORS

... Giving Complete Satisfaction to War-time Cement Producers.



Above — A STURTEVANT Air Separator. Right — STURTEVANT Ring-Roll MILL. STURTEVANT also makes Jaw Crushers, Crushing Rolls, Swing Sledge Mills, Crushers and Screens.



STURTEVANT  
MILL COMPANY  
HARRISON SQUARE  
BOSTON, MASS.

STURTEVANT

## Maintenance

(Continued from page 90)

one to two years may have passed since the machine was first laid out on the drawing board.

Once a machine is in production, there is a constant demand for changes to meet local conditions, and insofar as it is practical to do so, the manufacturer meets these demands—frequently at increased cost to himself rather than at an increased selling price. Any change involving production of small lots of special parts and departure from

standard quantity production increases costs disproportionately.

### Parts Service Important Part of Manufacturer's Business

After the investment in production tools and raw material, in experimental work during development, quantities of the new drill and of spare parts must be distributed among the numerous service branches and agencies so that prompt parts service can be rendered. The production tools, and stocks of drills and parts at the factory and in branches represents an investment of major

proportions requiring capital, and at the same time is subject to taxes, insurance, and administrative costs, but all of it is necessary to render the all-important service.

Drill manufacturers, owing to the severe nature of the work done by a rock drill, have always maintained extensive service facilities, available to all users, and in general, of great help to those engaged in rock excavation, be it mining, quarrying, or construction. This serves to aid the customer and to assist the manufacturer in obtaining first-hand knowledge leading to further development.

It is sometimes said that rock drill prices are high. They are if viewed in relation to size or weight, but not in relation to performance and service facilities, and the annual statements of the companies engaged in the business do not reflect unreasonable profits that would indicate the advisability of lower price levels without danger of crippling further development advances and service facilities.

### "Pirating" Repair Parts

This parts business, especially in the case of widely used models, has attracted the attention of, shall we call them outlaw manufacturers, who have entered the field without the burden of the engineering, development, marketing, and service costs borne by the legitimate manufacturer.

These firms step into the picture after the original manufacturers have done the designing, development, and introductory work on the complete machine. Somewhere they can borrow, or buy the parts they wish to copy. Chemists and metallurgists can approximate the analysis of the steel used which the manufacturer has selected through long experience and actual test, and can roughly determine the heat treatment which the steel has received, and may then prepare to counterfeit the parts.

The outlaw maker does not have access to the manufacturing limits observed by the manufacturer but must start from a sample which may be near the minimum limit or near the maximum limit of size, and must begin his range of limits from there with the result that the outlaw part may be too tight or it may be sloppy. In either case the efficiency of the drill suffers.

Some parts can be duplicated with fair success because they are not subjected to severe usage. Parts which have required careful study for heat treatment and steel selection cannot be made to equal the genuine part.

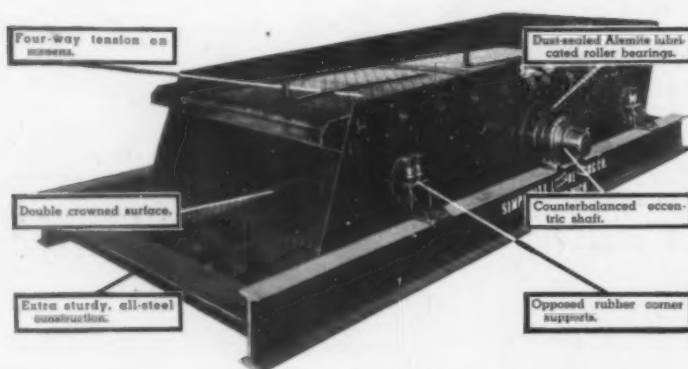
(Continued on page 94)

# CLEANER MATERIALS MORE ACCURATE SIZING

—SAY CUSTOMERS OF LARGE WESTERN FIRM USING *Simplicity* SCREENS

Recently the head of a large Aggregate Producing company in the West made this statement. — "I've always understood that Simplicity Gyrating Screens were good, but I didn't realize how good they are until after I installed that 4'x 10' triple deck screen in one of my plants. No other screen is *one, two, three*, when compared to a Simplicity. Hardly a day goes by without some one of my customers making some comment about how perfectly sized and cleaned my material now is. From now on its Simplicity screens for me — the best aggregate screen on the market."

You, too, can insure better cleaned, more accurately sized aggregates by installing a Simplicity Gyrating Screen. Write today for complete facts and prices.

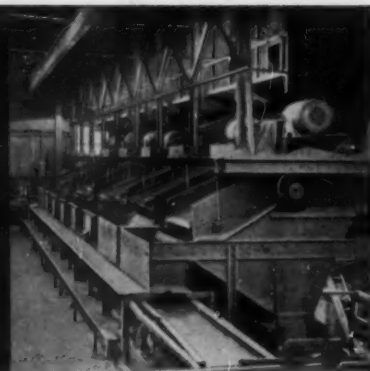


**Simplicity**  
ENGINEERING COMPANY • DURAND MICH.

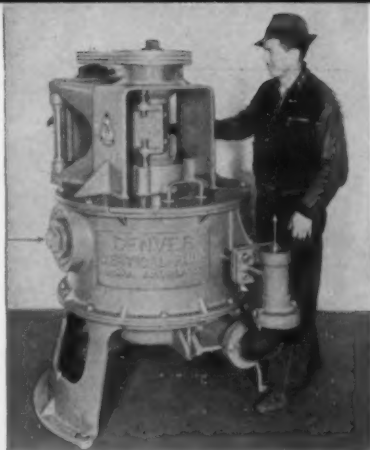
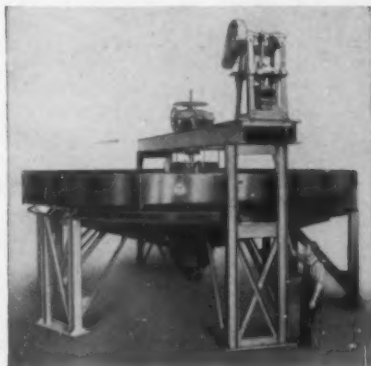


# DENVER EQUIPMENT

for 24-hour Production  
*from*  
CRUSHER to FILTER



◆ No. 30 DENVER FLOTATION CELLS are the machines built for large tonnage plants . . . they have all the mechanical and metallurgical advantages of the smaller tonnage units. The present period makes it essential to produce a high grade concentrate and still handle maximum tonnage. The Denver "Sub-A", due to the distinctive gravity flow method of circulation, eliminates pumps and elevators. Correct mechanical agitation and aeration account for the selective action in each cell. The cell to cell design permits cleaning and recleaning operations without shutdowns and insures "24 Hour Production."



◆ DENVER VERTICAL SAND PUMPS have long been leaders in the field of difficult pumping problems . . . the pumping of sticky flotation froth, gravity concentrates, deslimed pulps, or pulps containing gritty material . . . any material which can be made to flow by gravity to the feed opening can be handled by these efficient vertical pumps. Built in six sizes and described in Bulletin No. P10-B.

◆ DENVER-DILLON VIBRATING SCREENS are proving themselves in the present emergency . . . many new uses are being found for these units. If you are not already familiar with this vibrating screen, write for a copy of Bulletin No. S3-B3.

THESE DENVER SPIRAL RAKE THICKENERS are now available in the lowhead beam type design in sizes up to and including 75 feet in diameter. Patented spiral rakes move the material to center cone in one revolution. A Denver Spiral Rake Thickener will reduce your costs. ◆



◆ DENVER HYDROCLASSIFIERS are solving the most difficult fine sizing and desliming problems. Accurate separations are now being made in the 100 mesh range and finer; this fine separation requires considerable classification area as well as minimum agitation. Denver Hydroclassifiers are built with enclosed worm gear drive and convenient handwheel which easily lifts rakes. The patented spiral rakes convey material to center in one revolution. The metallurgical and mechanical advantages of this unit will fulfill the most exacting requirements where a separation of extremely fine products is desired. For flowsheet applications and complete details on this machine, write for new Bulletin No. C4A-B.



◆ Every Plant Should Have a copy of this "Catalog of Reconditioned and New Equipment for Immediate Shipment". Delivery is very important today, and you can fill many of your emergency needs from this list. Before you buy any equipment, it will pay you to investigate the machines now "In Denver Stock." Write today for your copy of this Bulletin No. G4200.

USE OUR BATCH & CONTINUOUS TESTING SERVICE



NEW YORK CITY, NEW YORK: 50 Church St.  
CHICAGO: Suite 1005, 69 W. Washington St.  
SALT LAKE CITY, UTAH: 727 McIntyre Bldg.  
TORONTO, ONTARIO: 45 Richmond St. W.

MEXICO, D. F.: Edificio Jalisco, Calle Ejido No. 7  
MIDDLESEX, ENG.: 493A, Northolt Rd. S. Harrow  
RICHMOND, AUSTRALIA: 530 Victoria Street  
JOHANNESBURG, S. AFRICA: 8 Village Road



**DENVER EQUIPMENT COMPANY, 1400 17th St., Denver, Colorado**

## Maintenance

(Continued from page 92)

performance machines, and the maintenance of adequate service to the user, comes from the sale of parts. It is inevitable from the very nature of the service rendered by rock drills, and of the conditions under which they are used, that parts requirements occupy an important place in the picture, to a greater degree, perhaps, than any other type of machinery. They are made with the precision of a watch, they run at high speed, and are subjected to severe shocks and rotational strains.

and operate in the presence of abrasive cuttings and water from which complete protection of the mechanism is impossible. Parts consumption, therefore, is inevitable from time to time.

The apparent economy of using other than genuine is a delusion, as has been proven in the case of automobiles through the years. Careful cost records are the best way to determine this.

The investment and risk of the outlaw manufacturer are far less than the drill manufacturer. He has contributed nothing to the advance-

ment of the art. It is impractical, if not impossible, for him to stock parts at convenient locations because he is making all parts for all models of all makes.

He lends no aid to the various associations of operators which derive much of their support from the manufacturers who serve these industries.

In short he contributes little to the ultimate benefit of the user of the rock drill except a lower first cost on repair parts which deprives the original manufacturer of the compensation due him for development and service which, if carried to an extreme, would put an end to further advancements, and would curtail service facilities, to the ultimate detriment of the user.

So, in conclusion, we urge the operator of all types of equipment used in the rock products industries to make sure that the parts he orders through jobbers or distributors, or direct from the manufacturer, come from the manufacturer of the original machine.



### Unusual Idea

In previous advertisements we have described various special ideas employed by aggregate producers to protect their belts from damage, and to obtain the longest possible service from their belting. Another such is this perforated pipe, which directs a spray of water against the belt, to wash off sticky materials which might cause damage.

## Your BELTING IS HARD TO REPLACE—MAKE IT LAST



### FUNDAMENTAL CARE

Make a note now (While you are thinking about it) to send for a batch of Goodall's bright red and green "Conserve Rubber" V-Tags. Several of these tags wired to various points on your conveyor system will serve to remind your operators constantly to follow the rules for care of conveyor belting . . . and while you are at it, why not send for a dozen or so of the booklets we are printing reproducing this entire series of Goodall ads, showing all the unusual design ideas and fundamental rules we have described.

# GOODALL

RUBBER COMPANY INCORPORATED

5 South 36th Street, Philadelphia, Pa.  
New York, Boston, Pittsburgh, Chicago  
Government Department, Washington, D. C.  
Goodall Rubber Company of California  
Goodall Rubber Company of Texas

Mill: Trenton, N. J. (Est. 1870)—73 years of "Know-How"

Date.....

Goodall Rubber Company  
5 S. 36th St.  
Philadelphia, Pa.

Gentlemen:

Please send us....."Conserve Rubber" V-Tags.

Also we should like to have  
.....of the booklets on this  
complete series of ads as soon  
as they come off the press.

Name .....

Company .....

Address .....

P. O. State.....

### Sand Dredging Rights

BOWMAN SAND & GRAVEL CO., has requested extension of its rights to dredge sand and gravel from the Coosa river from the U. S. Engineer Office. The franchise extends from Gadsden to Cedar Bluff, Ala.

H. C. MILNOR SAND CO., and the Oliver King Sand & Lime Co., both of Knoxville, Tenn., have asked for extension of permits from the War Department to dredge the Tennessee, Holston and French Broad rivers.

TENNESSEE VALLEY SAND & GRAVEL CO., Sheffield, Ala., has requested a three-year extension of its permit to dredge sand and gravel from the Tennessee river.

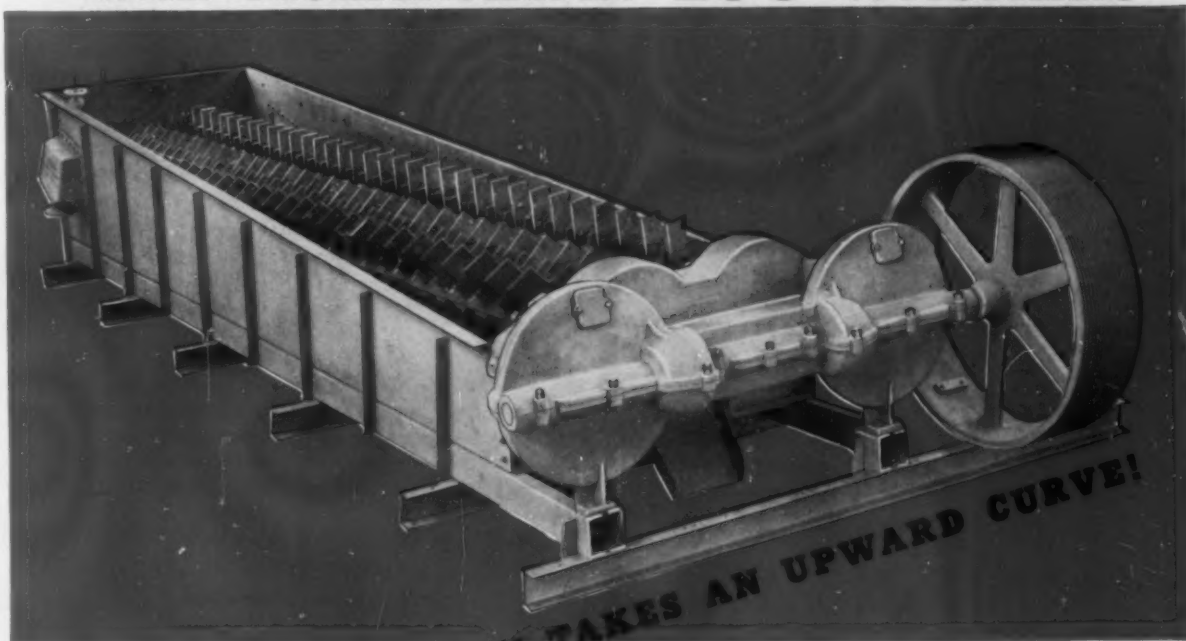
Other three-year extensions were requested by Knoxville Sangravl Material Co., Knoxville, Tenn.; Caney Creek Sand & Gravel Corp., Rockwood, Tenn., and Dixie Sand & Gravel Corp., Rockwood, Tenn., and J. E. Foster, Martel, Tenn.

### Big Gravel Contract

RAY SABLAIN, Lansing, Mich., one of the largest ready mixed concrete producers and road construction contractors in this area, has received contracts for hauling 559,000 cu. yd. of gravel for use in building a bomber plant and providing access roads. Two new 99-M Austin-Western graders and two International D-14 tractors were purchased for this job.



## —with McLANAHAN LOG WASHERS



**PRODUCTION TAKES AN UPWARD CURVE!**

Today's exceptionally engineered McLanahan Log Washer is the culmination of the many features developed since McLanahan pioneered and built the first steel log washers over 50 years ago.

McLanahan Log Washers are consistently setting new standards in ruggedness, low operation and maintenance costs, all-around performance under most severe usage.

McLanahan features include the rugged washer box . . . highest quality materials throughout . . . gears and bearings carrying all shafts completely enclosed in oil-filled SAFETY housing, protecting moving parts and operators . . . logs adjustable and separately driven by heavy cut STEEL gears . . . special hardened paddles.

*Bulletin WLO-171 gives complete data.*

### **McLANAHAN and STONE CORPORATION**

Pit, Mine and Quarry Equipment Headquarters Since 1835

**HOLLIDAYSBURG • • • PENNSYLVANIA**



## GRUENDLER CRAFTSMANSHIP

Employed by U. S. A. in the WAR EFFORT

**100 to 150 TONS  
of CRUSHED ROCK  
PER HOUR**



**This SUPER JAW CRUSHER**  
(24" x 42", Open Head Eccentric Type)  
recently added to the **GRUENDLER**  
Line, Now Serving America — with  
**PEAK PRODUCTION!**

Answering the call for greater production on the toughest kind of rock—Gruendler came through.

This Jaw Crusher, 54,200 lbs. in weight, built of High Carbon Plate Steel, and large S.K.F. Roller Bearings, has tremendous crushing power, reducing steam shovel rock to 5" to 6" minus in one operation.

**Stationary and Portable  
Crushing and Screening Plants**

Built by Gruendler to meet  
America's War Time  
Requirements

**SERVING THE U. S. A.  
IS OUR BIG JOB NOW!**

**GRUENDLER  
ENGINEERS**

On the job to help you  
in any way—Blue Prints  
or Practical Suggestions  
—No Obligation.



**SEND FOR**

Illustrated Catalog or  
Information Pertaining  
to Our Reduction Equip-  
ment.



## Manufacturers in the War

(Continued from page 78)

and General Staff School of the United States Army.

**ALLIS-CHALMERS MANUFACTURING CO.:** EDWIN H. BROWN, engineering vice-president, has been loaned to W.P.B. as assistant chief of the Iron and Steel Branch.

**DORR CO.:** LIEUT. ANTHONY ANABLE, U.S.N.R., was the former advertising manager of the company, who was largely responsible for interesting this company in the sand industry.

**ROBINS CONVEYING BELT CO.:** CHARLES A. THOMPSON, salesman, is now a lieutenant in the U. S. Army.

**NORDBERG MANUFACTURING CO.:** ROBERT SCHULTZ, former salesman, crusher department, is first lieutenant, U. S. Army Engineer Corps.

**MARION STEAM SHOVEL CO.:** J. J. DIVNEY, former director of service, is an officer of the U. S. Army.

### In the Public Service

**THEW SHOVEL CO.:** M. B. GARBER has been loaned to the W.P.B. as chief of the Excavating and Grading Section, Construction Machinery Branch.

### In the Navy

**THE BUFFALO SLAG CO., INC.,** reports that PAUL J. KREMER, assistant secretary of the company, is now in the Navy. The company now has 30 employees in the armed services. This report was received to classify with the operating company personnel items on page 76.

## Canada Makes Price Control Work

By **KENNETH R. WILSON**

Ottawa Correspondent

**O**UT OF CANADA'S 1942 experience with wartime regulations and controls have come important changes—also lessons which business management in the United States may find of great value in 1943. Canadian control experience now reaches back almost four and a half years.

After one year of an overall price ceiling Canada has found it necessary to adopt an entirely new tactic—stabilization of the cost of living.

Actually, Canada's price ceiling policy proved a phenomenal success during the first 12 months of operation but the lesson Canada has learned and is putting into effect in 1943, is that no one policy is sacrosanct in the rapidly-moving battle against inflation. A program which looked watertight in December, 1941, was headed for sure disaster in 1943 unless drastic changes were made.

Canada announced a drastic change in policy early in December by payment of new and outright subsidies to consumers. All across Canada, milk prices have been cut a full two cents a quart and the retail prices of tea, coffee and oranges ordered reduced. The difference between the new and old prices will be made up by direct federal subsidy—a subsidy to "peg" the cost of living.

One basic reason is that price control in Canada is tied to wage control by means of a cost-of-living bonus. Every time the cost of living rises a point, Canadian wage earners are entitled (by law) to a raise of 25c a week. (This is in lieu of increased wage rates which are banned in Canada for the duration.) These wage-price adjustments are made quarterly.

## A SALUTE to the Nation's War Effort

★ Since Pearl Harbor, our Nation has amazed the world with its speedy transition to war production. Today its tanks, ships, planes and guns, as well as its fighting men, are dealing telling blows on every far-flung fighting front. Marion salutes the Nation's war effort and is proud of the part it is playing in the production of vital raw materials and the construction of war plants. Victory is bound to be the reward of such determined effort.

**THE MARION STEAM SHOVEL CO.**  
Marion, Ohio, U.S.A.      *Offices in all principal cities*

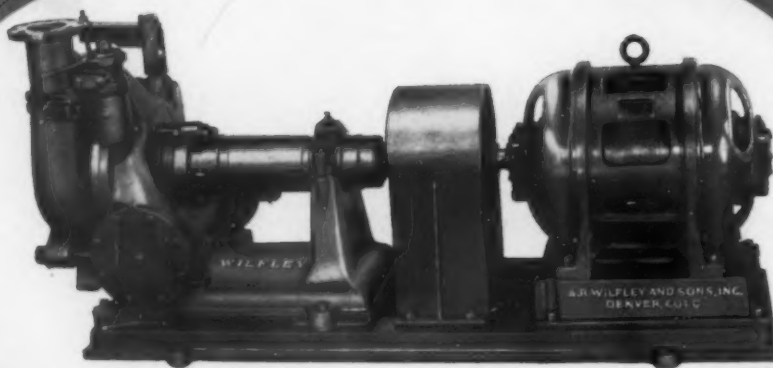


*Serving industry since 1884*

# MARION

SHOVELS • DRAGLINES • CLAMSHELLS  
CRANES • PULL-SHOVELS • WALKERS

Gasoline — Diesel — Electric —  $\frac{1}{4}$  cubic yard to 35 cubic yards



ROUND THE CLOCK

# Performance

WITH LOWER PUMPING COSTS

Right now when "all out" production means everything to our Nation's future, WILFLEY pumps are doing a record-breaking job . . . delivering continuous, 'round-the-clock performance day in and day out for months on end. Important and exclusive features of design and construction are what make WILFLEYS the recognized tops in the pumping field. Heavy pumping parts of rubber, alloy iron, alloy steel . . . each has its application. **Individual engineering service** insures your getting the particular combination that delivers best results on **your** particular job. If you want a pump that really **delivers** . . . write, phone or wire for complete details.

**A. R. WILFLEY & SONS, Inc., Denver, Colo., U.S.A.**  
**NEW YORK OFFICE: 1775 BROADWAY, NEW YORK CITY, N. Y.**

# WILFLEY

**centrifugal PUMPS**

# Machinery Men's Part in the War

Plants and personnel serving  
our country in many ways

**W**E ASKED our machinery friends to supply us with some account of their war activities and what they were doing to take care of their customers' needs in these rock products industries. The answer to the first is simple and direct in nearly every case. They are practically 100 percent at work on war implements of one kind or another—and under the circumstances are not permitted to go into details. War implements, in these days of total war all over the face of the globe, include crushing plants and all kinds of construction material equipment. Yes, the U. S. War Department has even asked our own suggestions for cement-mill machinery!

The contribution of some of the larger manufacturers in personnel to help the various branches of W.P.B. and on the industry advisory committees is too large to recite in detail. Also, of course, in spite of their manufacture of implements of war, large holes have been made in their personnel by the uniformed branches of the services.

In general, there seem to have been no insurmountable difficulties in keeping rock products plants supplied with repair and maintenance parts, and in many cases with new equipment. No industry not directly producing war implements, or raw materials for war implements, has fared better than the rock products industries which have been able to obtain mine ratings and serial numbers. This has been because Dr. Wilbur Nelson and his assistants in the Mining Division of the W.P.B. have done a splendid job in looking after the needs of the industries in their division. The National Association staffs in Washington have also been very helpful.

## Service to Customers Now and After

Because many manufacturers failed to respond to our letter, we can give only a few typical remarks, which however are enough to show that there is no let-up in the desire to serve customers:

DEISTER MACHINE Co., R. J. Roberts: "Crushed stone, and sand and gravel producers now seem to have a very clear picture of the priority situation, and of their eligibility to obtain repairs as well as new equipment. They appreciate the fact that, in supplying their needs, we are governed by the same general rules and restrictions, hence we find them very willing to cooperate to the fullest extent in order to make the best of a difficult situation. So far as post war conditions are concerned, we are looking forward to a substantial increase over the present unprecedented demand for vibrating screens. To successfully meet this we have first and foremost the experience of manufacturing under wartime conditions. Then, with an open market for raw materials, free from extraordinary government consumption for war purposes, and the removal of restrictions on purchases, it becomes simply a matter of an increase in manpower and floor space, both of which we have reason to believe will be available when needed!"

Here is one, unusually complete; and we believe typical of what many

of our rock products machinery manufacturers are doing under stress of war orders and war conditions:

## Economizing on Critical Materials

UNIVERSAL ROAD MACHINERY Co., A. B. Shufeldt: "(1) Perhaps fortunately for us our standard equipment has fitted directly into the war effort as crushing and handling equipment has been used extensively in building the new air bases along the Atlantic Coast and in the Caribbean. We have been furnishing equipment to prime contractors for this purpose since March, 1941, and have orders ahead of us at this time in the same direction which will maintain our plant in full operation for the next five or six months, provided we can get the necessary materials to meet our schedule. In addition up to the present time, we have been able to supply all repair parts required for our customers promptly and have made a concentrated effort both in our advertising and by direct mail to impress on equipment users the importance of maintaining their plants in proper repair to avoid break-



Brig. Gen. G. M. Barnes presenting the Army-Navy "E" banner to the Bucyrus-Erie Co.



Presentation of the Army-Navy "E" banner to The Barber-Greene Co.

downs with loss of time and production and also to avoid the purchase of new equipment during the war.

"(2) We are also offering all customers the service of our engineering department to advise them the best method of plant operation, particularly in the direction of reducing the wear and tear on the machine to a minimum, thus avoiding unnecessary replacements. We also offer assistance to our customers in the way of getting them proper priorities, if they are entitled to be considered essential, so that they may receive reasonably prompt service which could not be given with low priorities, and at the same time assisting us to obtain materials for this purpose.

"(3) In order to conserve new critical materials, we have been buying usable items from scrap dealers and a number of other sources of supply outside of the open market, thereby reducing our demand for new materials. We also have made a complete inventory of all items which we have in stock that are obsolete or old style and are converting these wherever possible or if this can not be done the material is scrapped.

"(4) We fortunately have been able to make quite a number of substitutes such as the use of malleables instead of steel, canvas belting instead of rubber, special plastic items to replace rubber, and a number of similar items all of which reduce our use of critical materials.

"(5) During the early part of this year we cleaned up our entire plant, scrapping all materials that were unusable now and are disposing of our scrap on a monthly basis instead of every six months, which was our usual practice previously.

"(6) We are constantly redesigning our installations wherever possible to utilize materials which we have in stock or which are available even though this means a departure from standard design in order to further avoid the purchase of new materials of the proper size or dimension.

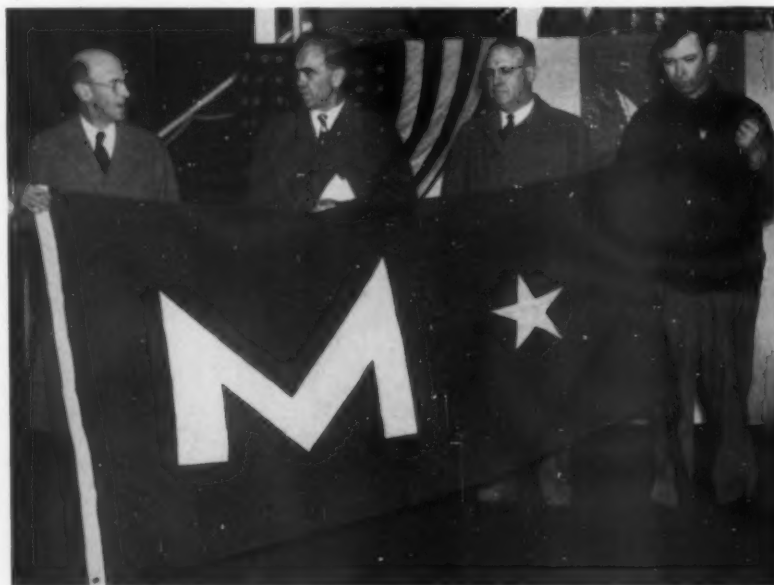
"We feel sure that every manufacturer is working in the same direction, using every effort to conserve both time as well as critical material, although unfortunately we get very little credit in public print for the effort.

"In regard to the post war period, it has always been our personal opin-

ion that while there may be a very short period of reaction or let down after the war ceases, there will undoubtedly follow a period of exceptional prosperity with an unprecedented demand because of the many shortages of civilian materials made necessary by the war effort. In our own shop we have been preparing for this period by purchasing the new items of equipment which will speed up our shop work or increase our capacity and at the same time placing our entire plant in the best working condition possible. This method, of course, works two ways as it helps our production right now in connection with the war effort and also provides for a continuance in the post war period."

### Difficulties and Plans of One Small Company

SYNTRON Co. (manufacturers of vibrator tools and devices), D. G. Black: "Our company has been hard-pressed by this war effort, and its manufacturing facilities and personnel taxed to the limit to meet the increasing demands for the particular type of equipment that we manufacture. In addition to the loss of men in our factory and engineering and office staff, we have lost three district managers: Ural V. Martin, manager of our Houston branch office; A. Murray Metz, manager of our Milwaukee branch office, and Paul J. Moore of our Chicago office are all now serving as lieutenants in



President D. J. Skelton of The Marion Steam Shovel Co., receiving the "M" pennant of the Maritime Commission

the U. S. Navy. The writer is an advisory member on the War Production Board's Advisory Committee on Portable Electric Tools, in connection with our electric hammers.

"The steel companies, magnesium and practically all of the processing and chemical companies identified with the War effort have loaded us down with orders for our vibratory feeders and the vibrators we make for agitating bins, hoppers and chutes to promote a free flow of material. In addition to this, the Chemical Warfare Service and other branches of the Armed Forces have loaded us down even heavier with orders for the same type of equipment.

"Nevertheless, we have found time to develop a new line of equipment that, as soon as the War is over and Normal Times on their way back, will be offered to the industry identified with Rock Products for commercial use. This is a new line of self-contained gasoline hammers of two types: One, a gasoline hammer 'paving buster,' or demolition tool; the other, a self-contained, self-rotating, self-cleaning rock drill."

#### Federal Government Demands Come First

SMITH ENGINEERING WORKS, D. D. Barnes: "Quite a few of our shop employees have gone into the service. This presents a serious problem because they are so hard to replace. In our office, Gerald L. Smith, our vice-president, is just about to be commissioned as a lieutenant in the U. S. Navy. The same applies to Harold Munro, one of our engineers. He has been commissioned an ensign in the Navy. These men are experienced and capable engineers with years of training and experience in our line and it will be impossible to replace them. We, of course, expect to have these men back with us when the war is won. It now appears that we will also lose our purchasing agent, Gordon Gauger, and he will be very hard to replace. Under present conditions, purchasing and expediting of materials is one of our most difficult problems.

"We are contributing to the war effort by building all kinds and types of sand and gravel and quarry plants for the Army and Navy, for Lend-Lease and for Army and Navy contractors. These include a great many large plants for Air Bases, Fortification Work, Dry Docks, Ship Yards, etc., for Alaska, the Panama Canal, Hawaii, and many overseas locations, domestic and foreign, as well as port-



Army-Navy "E" banner presentation ceremonies at the Wellman Engineering Co. plant

able plants for the Army and Navy. We are also furnishing equipment for important mining installations as well as for special steel alloy manufacturers. Telsmith equipment is performing very satisfactorily on all of this work and we have received some nice compliments from the armed forces on the service that we have given in the way of delivery, etc., and in the way in which our plants and equipment are performing.

"We mention this war work so that our regular customers, the readers of Rock Products, will understand why at times we have been unable, under present conditions, to give them as good service as they might expect. We, like everyone else, have had to place orders for important war work before everything else and this often results in disappointment to some of our old and regular customers, which we very much regret but cannot help.

"However, we are doing everything possible to give our regular customers the very best service we can under these difficult conditions. We are also planning for the period when the war will be won and over with by designing new equipment, making improvements in design, etc., all of which they will benefit by when their post-war demands arise.

"We feel very fortunate, both for the sake of our customers as well as for ourselves, that we have been able to continue with the manufacture of our regular products and we can only hope that this situation will continue to exist throughout the war period.

"It might be a good idea for you to call to the attention of your readers all of the new limitation orders that are now coming through to the manufacturers. These are going to make

it more difficult for them as well as for us in purchasing and supplying new equipment and, in most cases, it will be necessary for them to apply to the W.P.B. on special forms for permission to purchase. Such applications must be made by the producer and must be approved by the W.P.B. before the manufacturer can even consider the order.

"Crushed stone and sand and gravel producers are also going to feel the shortage of manganese steel very acutely. The manufacturer's requests for manganese steel with which to fill his customers' orders for replacement parts are being very severely cut. Operators should prepare themselves by doing everything possible to make their manganese last longer, by building up manganese-steel repair parts by welding, by planning for delays in shipment of wearing parts and by preparing in some cases to substitute chilled iron for manganese steel.

"Your readers are our customers and we are going to do everything that we can to help them in so far as we are able and still comply with the demands of the war effort.

"To conserve manganese steel, we suggest that crusher users plan to build up their worn manganese jaw dies, mantles and concaves by welding. We also suggest that owners of crushers working on limestone, and other of the softer and less abrasive rocks, consider the use of chilled iron mantles, concaves on gyratory breakers instead of manganese steel. At present at least the chilled iron is not as hard to secure. It is also quite obvious that users of all types of crushers can save wearing parts by operating with as large a discharge

opening as is possible or practical.

"By using the best grade of oil or grease, the crusher owner can prolong the life of the bearings and by continuously filtering the return oil from gyratory crushers as can be done with all late model TelSmith Crushers, the life of the bearings can be greatly increased.

"Perhaps needless to say is that the life of any crusher and its parts can be greatly increased by keeping the machine perfectly tight at all times. This requires regular attention which most operators give to their equipment."

#### Industrial Sand Developments

HARDINGE Co., Harlowe Hardinge: "Most of our shop is devoted to manufacturing machinery for mining and processing critical metals such as nickel, chrome, zinc, copper, magnesium, aluminum, vanadium, manganese and the like.

"We are treating a number of ceramic materials for manufacture of airplane spark plugs, and we have, recently, done quite a bit of work in the treatment of sand in our hydro-classifiers and thickeners, which is used as a special moulding sand in the manufacture of airplane motors. We are extremely busy.

"Our sales and engineering force are devoting most of their time in assisting in the design and operation of our newest projects, and, also, we have done quite a bit of work in the way of helping our old-time friends and customers work out changes to their plants, without the addition of new equipment, particularly where they are unable to supply priorities sufficiently high that it will buy new equipment. This has been done to maintain goodwill and keep our contact with our old friends. We have done quite a bit of work in assisting cement mill operators to obtain a better product and simplify their flowsheet.

"We, recently, helped a former producer of gold to revamp his plant, using most of his existing milling equipment and converting it to the production of graphite. In another case, we assisted a former manufacturer of porcelain enamel to enter the field of grinding magnesium for use in flares, tracer bullets, incendiaries, etc. All of this can be done with comparative ease as all of our salesmen have been old-time operators, and are engineers. While we are not doing much in the way of making parts for guns, ships, planes or tanks, we have the satisfaction of assisting in the production of the materials that go

into the ships, guns, planes and tanks which, while not as glamorous, is just as vital and important to the War Effort."

#### Very Definitely Looking Ahead

STEARNS MANUFACTURING Co., Eugene F. Olsen: "First, in common with all good Americans, we try to do those things that will help win the war. In addition to making concrete products plant equipment for war projects, our plant works 24 hours a day, seven days a week, on army equipment items completely foreign to our regular line of equipment.

"Second, we are doing our level best to keep our concrete block and brick machines and mixers in the hands of our customers working efficiently.

"Third, we have expanded our engineering research department, experimenting with new and promising ideas for the refinement of our present equipment and the possible creation of new machines with which to equip post-war concrete products plants to meet the dammed up demand for building construction."

#### Saving Critical Materials

SIMPLICITY ENGINEERING Co., R. C. Johnson: "We have had no personnel changes which have affected any of the Simplicity organization known to the general industry. Numbers of our shop and engineering forces have gone into the various branches of service, but up to now all of our field men are still with our organization.

"In the line of change in design to conserve critical materials, we have made some changes which have strengthened our equipment so that it will operate longer under severe punishment, so you might say that this is a change which does conserve critical materials. We have not been able to replace any of our parts now made of critical material with non-critical.

"We have been able to supply large numbers of machines going into direct production of concrete aggregates and material for asphalt plants, with these plants located at practically every important Army, Air and Naval Base in the United States, Alaska and all of the lend-lease defense points. We have also been able to maintain a fairly consistent supply of all needed parts to keep these machines in full operation with a minimum loss of shutdown time.

"Our plans for the future are somewhat nebulous, since it is pretty near impossible to predict just what will be

required and when it will be required. However, we are trying to maintain our organization, both as far as personnel and financial background are concerned, so that when the after-war developments do come, we will be able to take our full share in them."

#### Operating Manuals

We find several manufacturers are making special efforts to serve the users of their equipment with "Operating Manuals." Of course such manuals have been issued many times before, but these war-time instruction books are especially designed to provide extra care and maintenance, to make emergency repairs, etc. A good example is the "Emergency Fix-It Handbook" of the Thew Shovel Co.

The booklet sets forth not only the best method of meeting emergencies in the field but provides a guide in the use of substitutes for critically hard-to-obtain materials. It tells Lorain users how to reshape tread pin holes, how to build up tread teeth, what material to use as a substitute for replacement bushings and much similar information. Clear and fully explained illustrations add to the clarity of the text. R. G. Thibaut, assistant manager of the company's service department, explains that while many of the suggestions contained in the "Fix-It" handbook are given as temporary expedients only, they can help to keep machines on the job, conserve worn parts and save owners both time and money.

We have referred elsewhere, in the article on Rubber to the operating manuals and handbooks available for the asking from tire and oil companies.

#### Win Awards

**B**OTH producers and manufacturers serving the rock products industry have been awarded honors by the federal government. The producers have been awarded the Treasury Department pennant for 100 per cent subscription of employees to war bonds on the basis of the 10 per cent payroll deduction plan. Manufacturers have been awarded the Army-Navy E burgee, the Maritime M pennant, Victory Fleet Flag, and Maritime Merit Award badge. Below represent only a partial list of those companies which have received awards:

Bucyrus-Erie Co., Milwaukee, Wis., celebrated the winning of the Army-Navy E award on November 7. Brig. Gen. G. M. Barnes, U. S. Army Ordnance Department unfurled the "E" banner and paid tribute to the production record achieved by the company. Captain D. D. Dupree,

## SERVICE

U. S. Navy, decorated employees with red, white and blue "E" buttons for accomplishments "above and beyond the call of duty." Addresses were made by W. W. Coleman, president; N. R. Knox, vice-president, representing the company, and by Robert Scott, representing the employees.

The Babcock and Wilcox Co., New York, N. Y., has been awarded the Maritime Commission "M" burgee in recognition of achievement at its Barberton works. The "M" burgee now flies alongside the Navy "E" burgee, which was awarded on May 11, 1942.

Barber-Greene Co., Aurora, Ill., employees were awarded the Army-Navy E Award for "ahead of schedule" production, "in impressive rites staged before a trainload of ditching, airport paving and other B-G construction equipment enroute to U. S. bases throughout the world. Each employee was presented an E pin. Ashley Barber, vice-president, presided and introduced distinguished guests. The acknowledgment for the E Award fell to shopman W. H. Sturm of the employees, who expressed the pride with which the B-G family will wear the E pin, and to W. B. Greene, vice-president and treasurer of the company.

Wellman Engineering Co., Cleveland, Ohio, received the Army-Navy E Award August 13 for its speed and efficiency in construction of a series of giant dry dock cranes to be used by the government in building warships. The cranes have their own Diesel power plants. A. E. Gibson, president, accepted the flag at a ceremony before a gathering of Wellman employees and E pins were presented in behalf of company employees to Daniel W. Edwards, a 40-year employee and Miss Olive Scheer, veteran of 31 years of service.

Towmotor Co., Cleveland, Ohio, received the Army-Navy E Award on September 14. Lester M. Sears, head of the company, accepted the E flag from Col. W. H. Clopton and turned it over to Elmer Ridding, employee's representative with the statement, "It's yours. Fly it over the production line, if that's where you want it. I'll be even prouder to see it there than over my office." Towmotor power lift trucks have been rolling off the lines at ten times the 1940 rate without unusual expansion and additions to the working force. The entire output is going to war jobs for the movement and storage of military supplies and equipment.

Macwhyte Company, Kenosha, Wis., was recently awarded the coveted Army-Navy "E" burgee.

Farrel-Birmingham Co., Ansonia, Conn., has been awarded the All-Navy "E" award entitling the company to fly the Navy "E" burgee with a white star added. All three plants fly the Navy "E" burgee. This is an additional honor for the company.

Independent Pneumatic Tool Co., Aurora, Ill., has been awarded the Army-Navy "E" pennant in recognition of its contribution to the national war effort.

Nordberg Manufacturing Co., Milwaukee, Wis., was a winner of the Navy "E" burgee last summer.

The Marion Steam Shovel Co., Marion, Ohio, was recently awarded the Maritime "M" pennant, the Victory Fleet Flag, and every employee may wear the Maritime Merit Award badge in recognition of its outstanding production achievement on work it is doing for the Maritime Commission. Marion is building portal cranes for the Commission which are used to build ships and load cargoes. J. E. Schmeltzer, technical assistant to vice-chairman of the Maritime Commission presented the "M" pennant and Victory Fleet Flag to President D. J. Shelton of The Marion Steam Shovel Co. Roy Bailey accepted the insignias for

the employees. Lt. Gov. Herbert of Ohio was the principal speaker at the ceremony.

John A. Roebling's Sons Co., Trenton, N. J., is another winner of the U. S. Navy Ordnance flag and E pennant.

Continental Gin Co., Birmingham, Ala., has been awarded the U. S. Navy Ordnance flag and the Navy E pennant.

Cooper-Bessemer Corporation, Mount Vernon, Ohio, recently was awarded the Maritime M award in a colorful ceremony on December 18.

H. K. Porter Co., Inc., Pittsburgh, Penn., was among the first 35 manufacturers in the country selected by the Army and Navy to receive the joint Army-Navy E Award.

Union Wire Rope Corp., Kansas City, Mo., was awarded the Navy "E" burgee for excellence in the war effort.

The Jeffrey Manufacturing Co., Columbus, Ohio, is another early winner of the E award for excellence in manufacture of ordnance equipment.

Broderick and Bascome Rope Co., St. Louis, Mo., received its Navy "E" award this summer. Capt. Edwin A. Wolleson made the presentation. It was recently given the new Army-Navy E Award.

Chain Belt Co., Milwaukee, Wis., was presented the Army-Navy Production Award September 19, entitling it to fly the flag over its plant and each employee to wear a lapel pin, for high achievement in the production of war equipment.

Wickwire Spencer Steel Co., New York, N. Y., has been awarded the Maritime "M" pennant and Victory Fleet flag in recognition of achievement at its Palmer Mass., plant.

Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J., has been awarded the Treasury Department "T" in recognition of the pledge made by its employees to contribute more than 10% of their pay for the purchase of War Bonds. This is the first "T" to be awarded to a large factory in the Passaic industrial area.

Harnischfeger Corp., Milwaukee, Wis., was one of the early recipients of the coveted Navy "E" award. The presenta-

tion was made to President Walter Harnischfeger by Rear Admiral Wat T. Cluverius.

American Hoist & Derrick Co., St. Paul, Minn., was awarded the Maritime Commission M burgee and Victory Fleet Flag in a recent ceremony.

Ingersoll-Rand Co., New York, N. Y., has received three Army-Navy "E" awards for three plants.

Osgood Co., Marion, Ohio, was awarded the Army-Navy "E" award on October 7, 1942.

Worthington Pump & Machinery Corp., Harrison, N. J., received the Army-Navy "E" award at its Holyoke, Mass., plant on October 22, 1942.

E. I. du Pont de Nemours & Co., Wilmington, Del., has been awarded the Army-Navy "E" award at 14 plants.

Goodyear Tire & Rubber Co., Akron, Ohio, was awarded the Army-Navy "E" on September 15, 1942.

Raybestos-Manhattan, Inc., General Asbestos & Rubber Division, received the Army-Navy "E" award at the North Charleston, S. C., plant on November 28, 1942.

## Peru Cement Production

SUSTAINED BUILDING activity in Peru makes the outlook for cement consumption look promising for 1942. The one mill in the country is installing additional kilns this year to increase daily capacity from 3000 bbl. to 4500 bbl. or more. Production in 1941 was 987,482 bbl. as compared to 732,239 bbl. in 1940. Imports of cement and clinker amounted to 5,191,330 gross kilograms in 1941. New plants are under consideration for Chiclayo in northern Peru and for Arequipa in the southern part.



Presentation of Treasury Department Award for 100 percent employee "war bonders"

# Car Shortage Chief Problem

Directors of National Association Meet in New York City

**N**ATIONAL INDUSTRIAL SAND ASSOCIATION directors held an open meeting in New York City on November 20, which was well attended and was the occasion of much interesting discussion. President J. M. STROUSS presided. E. W. BAUMAN was present to discuss the latest developments in W.P.B. He said the industry would continue to function under Preference Rating Order P-56 for at least the first quarter of 1943. There did not appear to be any complaints from this industry on account of shortages of repair and maintenance parts. The industrial sand industry is recognized by the Mining Branch of W.P.B. as an essential war industry.

Various other government rules and regulations were discussed in considerable detail by V. P. AHEARN, executive secretary. He emphasized the necessity for conservation of rubber in all forms, and called attention to the work being done by Whitehead Brothers Co. in this respect. Al Miller, president of the company, outlined his campaign, which is described elsewhere in this issue.

The matter of car shortage was also discussed. There is a shortage of flat-bottom gondola cars, because of their use for coal haulage, and it is a real hardship on the part of the industrial sand industry, because, while some products can be shipped in box cars, there is a substantial difference in freight rates, in many cases, between the same sand shipped in gondolas and in box cars. Secretary Ahearn predicted strict allocation of freight cars to the various war industries in the near future.

STANTON WALKER, consulting engineer of the Association, discussed various activities of the American Foundrymen's Association in connection with proposed standard specifications for foundry sand.

HAMILTON ALLPORT, chairman of the Research Committee of the Association submitted the following report as a statement of progress. No action was taken in connection with it:

### Report of Research Committee

"It will be recalled that this Committee rendered a survey in some de-

tail upon the subject of industrial sand research possibilities, and a research program for this Association, at the autumn meeting of the Board of Directors in 1941, and further at the annual meeting of the Association in June, 1942. Under present wartime conditions, it has seemed impracticable, or at least untimely, to consider research on many normal research topics then outlined by the Committee. For example, research on new products, or on new uses, hardly seems expedient at the present time in the face of other urgent demands upon the attention of the Association and its member companies. The Committee had endeavored to set forth the entire subject of Industrial Sand research to the Board and to the member companies without recommending however that any action now be taken other than to keep these research possibilities in mind for further consideration at an appropriate time.

"The Committee on the other hand now wishes to point out one topic of research which may be timely: that is, research upon sand plant efficiency. The Research Committee accordingly requests instructions from the Directors as to whether or not to proceed along these lines, to the extent of making a specific suggestion at the time of the annual meeting of the Association in the summer of 1943. The Committee is not making a recommendation to this effect at the present time, but is laying the subject before the Directors for discussion and advice.

"As an example of the nature of this research on plant and production efficiency, it may include a study of sand dryer types, sand drying costs, drying efficiency, and dryer output, with a view to our industry making best possible use of optimum sand drying technique and existing sand drying facilities. Similar studies may also be conducted on screening practices, looking to recommendations on most effective screening practices. The ultimate objectives of such studies under present conditions would naturally be the better use of existing facilities by the industry, and in turn maximum output and greatest service in the war effort.

"Similar plant and production research may be conducted upon plant equipment utilizing rubber and rubber substitutes; brass and bronze substitutes, etc. Individual experimentation by the member companies on the use of substitute materials or equipment necessary under war conditions is likely to be costly both in dollars and in tonnage output. Duplicate experimentation and trial and error procedures may be avoided by concerted research into these new problems, with perhaps greater overall efficiency and output for our industry resulting.

"Similar operating studies may be conducted in reference to fuels, fuel costs, and substitute fuels. In the same manner, a study of electric rates governing the operations of the member companies may later be a worth while topic of research, with a view perhaps to indicating possibilities to some of the companies, for entirely justifiable rate reduction applications.

"In like manner, research on the grinding of industrial sands may be developed, including possibly types and sizes of pebbles; a comparison of various pebble performance; optimum r.p.m. of grinding mills, etc.

"It is believed that other industries may in the past have taken the lead in plant and production research of the nature herein briefly outlined; while for some reason the Industrial Sand industry may heretofore have lagged in this respect. For instance, our affiliated industry, the foundry industry, has gone rather extensively through the medium of the A.F.A. into research on nearly all phases of foundry production; the Steel Industry through the medium of the American Society of Mechanical Engineers, the American Institute of Mining and Metallurgical Engineers, and other organizations interested in steel production into the subject of improved steel production; the automotive industry through the medium of the Society of Automotive Engineers into the subject of improvements in automobile production, etc.

"In conclusion, the Committee wishes to restate the fact that it is

(Continued on page 134)



Recent National Industrial Sand Association directors meeting. 1—H. F. Spier is an interested listener in this group. 2—A. N. Farmer, Sand Products Corp., left, and Jack Cleary, right, Oneida Lake Sand Mines. 3—T. C. Matthews, Pennsylvania Glass Sand Co. 4—A. Warsaw, Wedron Silica Co., having a confab with A. N. Farmer. 5—E. H. Daugherty, Taggart & Co., left, and Stanton Walker. 6—C. R. Wolf. 7—Just before the meeting. 8—C. Mathiesen, left, A. Y. Gregory, center, and Russell G. Hay, right

# Are You Conserving Rubber?

Can you prove to rationing boards you have done your part? Whitehead Brothers Company can



Decalcomania sticker which can be placed on windshield or side of truck

**F**OUNDRY SAND is just as essential a war material as the steel that is used in its molds. The foundry sand industry therefore is one of several rock product industries which have no great difficulties about priorities or gasoline rationing, etc. Nevertheless it is incumbent upon the foundry sand industry, as it is on all others, to use every effort to conserve our stores of critical materials like rubber.

When the time comes to ask for new truck tires, conveyor belt, gasoline and other supplies, every *privileged* producer and operator should be in a position to prove that he is *not privileged* to waste these critical materials; that he is doing his level best to keep his requirements at a minimum. Probably all producer executives fully realize this, but perhaps haven't realized that there are ways of demonstrating it—and contributing directly to the *esprit de corps* of the organization.

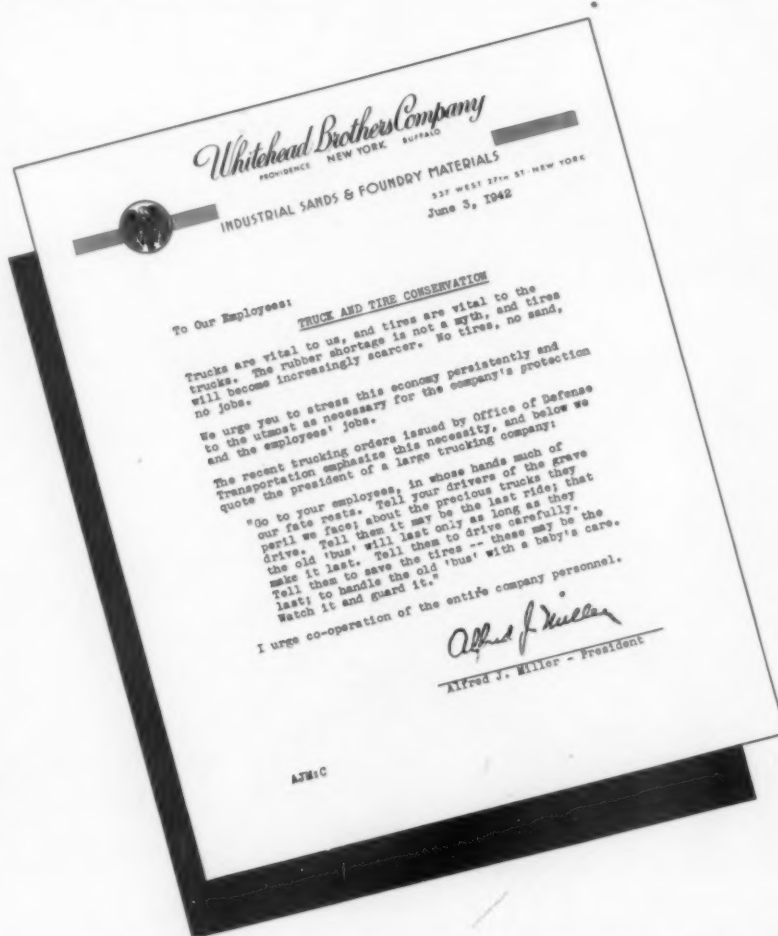
The method developed and used by Whitehead Brothers Co., producers of foundry sands in various localities in New Jersey, New York, Massachusetts and Rhode Island is simple and available to all who ask for it. The company uses numerous small trucks to haul from pits to screening plants, and sometimes from plants to railway sidings, etc. The going is often tough and hard on tires and equipment.

Starting last June 3, Alfred J. Miller sent out a series of five letters, reproduced herewith. The first was

on "Truck and Car Conservation." The second on July 27, on "Four Vital Spots" accompanied by a booklet of the same title. The third was on August 3 on "Do We Jack Up?" accompanied by a booklet of the same title. The August 17 letter was on "How to Lengthen the Life of Your Car and Save Gasoline," with another booklet "First Aid to Industry in Conserving Rubber." The last letter, dated October 1, went with the O.D.T. booklet, "America's Trucks, Keep 'em Rolling."

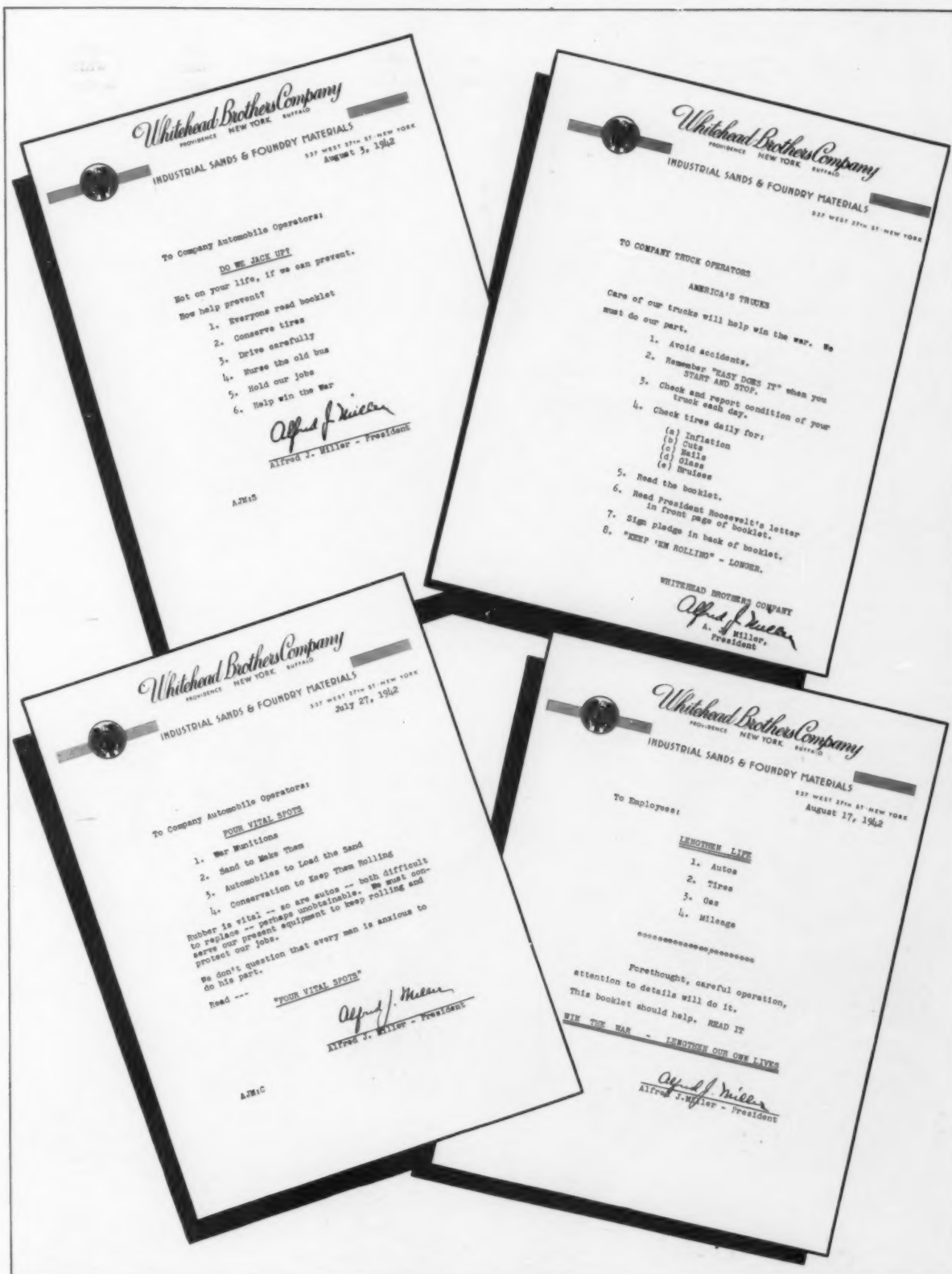
The last page of this booklet is a pledge (reproduced herewith) intended to be signed by the truck driver and returned to the O.D.T., which will then issue a decalcomania

(Continued on page 108)



First of a group of letters sent to employees in rubber conservation campaign

# CONSERVATION



Four typical letters sent to employees by President Miller of Whitehead Brothers Co. in the campaign to conserve rubber

## For 32 Years, Amsco Has Kept Pace with Changing Dipper Requirements

There have been sweeping changes in the dipper needs of power shovel builders and users since Amsco brought out the Missabe type manganese steel dipper back in 1910. Higher digging speeds, larger loads and less time out for repairs were among the user demands, to all of which Amsco bucket design has responded effectively.

The Amsco Missabe Dipper was an acknowledged advance over any previously built and it is still popular with operators in coal stripping, harbor dredging and in the Iron Range from which it got its name. This dipper's body has a front and back casting securely riveted together through overlapping sections. Bail brackets are on the front casting and are placed at an angle conforming to the line of bail pull so that shearing of rivets and pulling apart of front and back are virtually impossible.

In 1930, Amsco developed the first true renewable lip dipper, with the patented U-bolt fastening, interlocking joint design. This allowed lips to be changed in minutes instead of hours.

Since 1930, the Amsco lip design has evolved from the original blunt box shape to the present extended, rounded contour, sharp-edged lip with fanned teeth. The lips are carried

further up the sides of the back casting, shortening the U-bolt and enabling teeth and lips to withstand heavier stresses. Reduced overall weight, smoother interior and a double taper outwardly, from top to door, assure faster and maximum loading as well as faster, cleaner dumping.

In 1938, Amsco introduced an improved dipper of two-piece body design with the same rivetless renewable lip, permitting replacement not only of the lip, but the riveted-on front when it finally became worn.

Amsco Renewable Lip Dippers have helped the upbuilding of America, and have provided greater profit for users by substantially lowering their digging and handling costs. Their metal-conserving features are currently benefitting the war effort.

Amsco Renewable Lip Dippers (U. S. Patent 1,945,064) are made in all sizes from  $\frac{3}{4}$  yard capacity, with bail and back lugs arranged for any type of dipper stick. Buckets smaller than  $\frac{3}{4}$  yard are usually a one-piece type without renewable lip.

Ask for Bulletin 641-D, explaining the advantages of genuine manganese steel, and picturing all types and sizes of Amsco dippers, dipper parts and teeth.



Send in all  
your scrap  
now!

**Amsco**  
AMERICAN MANGANESE STEEL DIVISION  
Chicago Heights, Illinois

FOUNDRIES AT CHICAGO HEIGHTS, ILL.; NEW CASTLE, DEL.; DENVER, COLO.; OAKLAND, CALIF.; LOS ANGELES, CALIF.; ST. LOUIS, MO.  
OFFICES IN PRINCIPAL CITIES

THE AMERICAN

**Brake Shoe**

AND FOUNDRY COMPANY

## Tire Conservation

(Continued from page 106)

(a red, white and blue sticker in this case) that can be transferred to the side or windshield of the truck (a black and white reproduction about half size, is shown herewith). It did not take long, of course, to sign up

### A PLEDGE

To Keep 'Em Rolling Longer

Realizing that motor trucks are vital to our national transportation welfare, that the existing supply is all but irreplaceable, and that every extra mile each truck can be made to serve in safety is a direct help to the war effort . . . I hereby pledge that I will regard it as my patriotic duty to do all in my power to prolong the life of any truck in my ownership or care.

I will cooperate in a Preventive Maintenance Program.

I will do my part to see that frequent mechanical inspections are made and that all necessary adjustments and minor repairs are promptly taken care of to prevent major repairs, with consequent waste of parts and materials.

I will see that my truck is driven properly to avoid accidental damage, excessive tire wear, and gasoline waste.

(Signed) \_\_\_\_\_

Truck drivers' pledge which is designed to save maintenance

all the drivers, and they are proud of their "Conservation Corps" label.

The O.D.T. booklet described above also contains detailed directions for conserving truck maintenance, tires and gasoline. In addition to the O.D.T. booklet and the five letters, Mr. Miller obtained booklets referred to previously through the O.D.T. but issued by various oil and rubber companies. These are "How to Lengthen the Life of Your Car and Save Gasoline," by the Standard Oil Co. of New Jersey; "Four Vital Spots," by the U. S. Rubber Co.; "Will America Have to Jack Up Its 29,000,000 Automobiles?", by the B. F. Goodrich Co.; "First Aid to Industry in Conserving Rubber," by the U. S. Rubber Co. The last is particularly helpful because it covers the care and maintenance of hose, belting, packing, cable insulation and other kinds of mechanical rubber goods.

Including the original booklet of the O.D.T., this makes five booklets, one of which accompanied each letter of President Miller after the first which opened the campaign to his truck drivers and plant superintendents. From discussion by a group of producers it would appear that not many had thought to take all these measures to help in the campaign to save rubber.

(Continued from page 66)  
pany. Contracts for supplies, maintenance parts, lubricants, etc., are handled from the main office.

No expansion of personnel has been necessary but an experienced operating man handles each project as



H. Benson, chief mechanic, in charge of main shop at Flushing, N. Y.

superintendent. These men are regular superintendents from the New York area. At the present time the company is operating only two plants in its home territory—one at Flushing, Long Island, the other in the Bronx. Experienced personnel from the dismantled plants are those in charge on Government projects. Operating personnel at each job consists of the superintendent, a shipper, a batching man, one spotter, one man to unload cement, five for handling the aggregates which are unloaded from railroad cars, one man to operate the gates which load the belt conveyors and a man to oil and maintain the belt conveyors. All key men are regular company personnel, others that are necessary including some truck drivers are hired locally for each project.

#### Special Problems

Each project is served by standard equipment, but each has its particular conditions which must be handled, usually from headquarters. Each has

a plant that can batch a minimum of 200 cu. yd. of concrete per hour, but the demands vary and the number of truck miles must be carefully distributed between jobs. Each contractor naturally wants assurance that he will get delivery as he needs concrete, so it is imperative that truck mixers be moved between projects to meet peak pours. Often the mixers must be returned to the project from which they came to meet schedules that developed since at the original location.

Truck mixers are transported to the various jobs, and between jobs, on their own power. It is necessary to get clearance from officials of the States involved or permits through commanding officers to allow truck movements. An average of 30 truck mixers were needed for the Illinois project, for example. At the Pennsylvania job as many as 45 units were in service at times and, near the end of the project, 15 were all that were needed. The others were transported to another job then, where 40 or 50 trucks were needed. To give an idea of how much concrete has been put through the plants for delivery, the Illinois plant produced 223 cu. yd. per hour for a 9-hour day and consistently exceeded 200 cu. yd. In Pennsylvania, 2230 cu. yd. were produced in a 9-hr. day, with 39 truck mixers averaging  $5\frac{1}{2}$  miles to a round trip. The average was a single shift of 9-hr. on all jobs.

Climatic conditions had to be considered in the establishment of the plants. At the Pennsylvania job for illustration, heating facilities would have been needed if the concrete were to be poured during the Winter season. However, the pouring started in May and was completed in November. No provision was necessary for heating the mixing water or the aggregates but heat would have been necessary if the project had been delayed much beyond the completion date.

On the Illinois project the conditions were different. It was known that concrete would be poured through the Winter and actually was

poured continuously with temperatures as low as 12 deg. F. below zero. That plant was entirely enclosed, and the batching floor and offices were heated by steam radiators. Aggregates in the bin were heated by a combination of steam coils and live steam through jets. Mixing water was heated to 180 deg. F. by steam coils. Two steam boilers, one of 79-hp. and one of 50-hp. developed the steam, the larger one for heating the mixing water and the smaller to heat the aggregates and the plant. Similar boilers are used for the purpose on other projects where cold weather is encountered.

Preliminary to the establishment of a plant, J. H. Dixey, vice-president of the company, visits each site to make arrangements for operation in that area. A site has to be selected and a study made of the transportation facilities and living conditions for company personnel, key men and their families had to be provided for in areas where there was a heavy migration of workers. The labor situation, particularly for truck drivers, had to be considered and arrangements made.

The company never has been a producer of aggregates, so arrangements had to be made in advance for a guaranteed source of supply that would meet Government specifications. On the Illinois projects, arrangements were made to have two sizes of gravel and concrete sand shipped from stockpiles of the Chicago Gravel Co. plant at Rockdale, just southwest of Joliet, Ill. The haul was made by rail in gondola cars. At the Pennsylvania job an arrangement was made with Walker Bros., local contractors and stone producers, to furnish the aggregates. All the coarse aggregates were crushed stone, supplied from the Shippensburg Stone Co., Shippensburg, Penn.; the Chambersburg Stone Co. and from the Hanover plant of the Bethlehem Steel Co. Most of the stone was delivered by truck. Natural sand was shipped in from plants of the Arundel Co., Baltimore, Md. Similar arrangements had to be made for each other location.

A water supply had to be provided at some of the jobs where natural streams were lacking. Usually the contractors have driven wells, when needed, and furnished water storage tanks up to 40,000 gal. capacity. Some have had to be insulated. Local dealers had to be contacted and arrangements made for Diesel fuel oil and lubrication supplies.

Contract	Location	Date of Contract	Date of Delivery
Associated Contractors .....	Valhalla, N. Y.	Sept. 20, 1938	May 22, 1939
Ordnance Plant .....	Illinois	Nov. 28, 1940	Dec. 19, 1940
Ordnance Works .....	Illinois	Oct. 23, 1941	Dec. 21, 1940
Ordnance Plant .....	Tennessee	Oct. 6, 1941	Dec. 8, 1941
Defense Plant Corp. ....	Illinois	Mar. 9, 1942	May 1, 1942
Ordnance Depot .....	Pennsylvania	Apr. 13, 1942	May 20, 1942
Ordnance Works .....	Kansas	June 11, 1942	July 10, 1942

It can be readily seen that an organization for maintenance and repair is of extreme necessity on these jobs, where failure to make delivery will not be tolerated and each truck mixer must be counted upon for full-time service. No new equipment is available for replacement as such and only vital repair parts and supplies can be purchased.

The nerve center for keeping the plants and moving machinery going is the company's repair shop at Flushing, L. I. Albert Reese, vice-president, is the man responsible for keeping everything in running shape, wherever the jobs may be. Under him there is a chief mechanic with assistants at each project, which has its own repair shops.

Keeping truck equipment rolling is the principal maintenance job, since the job conditions usually are such that trucks are subject to far more than the ordinary wear-and-tear. The chief mechanic on the job must do the ordinary run of repair work and the main repair shop handles the repair jobs of major proportions.

At Flushing, as many as 14 to 16 mechanics have been employed to keep the moving equipment in repair. This shop has all the necessary equipment such as drill presses, shapers, milling machines and lathes, welding equipment, etc., to do any repair job that would come up. It also has the necessary auxiliary equipment, such as injector testers for Diesel engines to keep specialized equipment in working order.

A truck can be completely rebuilt in this shop in 10 days, including complete overhaul and even to include body work and painting. The policy is that, after selecting truck equipment that is of heavy, durable construction, each unit should be rebuilt entirely every two years, or just before going on a new project after it has undergone considerable service. A truck engine can be replaced with another in one day. According to Mr. Benson, chief mechanic, the trucks can always be made over in the shop to give the service of new trucks, since the original trucks were purchased of heavy construction that will endure as a foundation for rebuilding. In his experience, the Diesel engines can operate indefinitely with normal maintenance and service if good filters are always in use.

On the job, the mechanics are expected to do the ordinary run of repairs and generally, the major jobs such as overhauling engines, tearing

down transmission assemblies, etc., are the responsibility of the main shop. The job shops can do much of the heavy work of this type, including the replacing of truck engines, but are generally not expected to do them if such work will interfere with the regular and more routine kind of repair work out on the "firing line." At each job location, there is a light maintenance truck ready for immediate call if a truck breaks down or has a tire blowout.

Sometimes, necessary parts can be obtained on the job through a priority issued by the W.P.B. officer on the premises, but usually the part is obtained from Flushing and the worn or broken part is sent to Flushing to be repaired and placed in stock for later replacement. They are rebuilt like new. Each part in the stockroom at Flushing that is taken out must be replaced by a rebuilt part or one obtained on priority at the job location. A complete stock of all parts that could conceivably be needed is kept on hand at Flushing. Experience has proven that the kinds of breakdowns might all be along the same line within a short period of time. There might be a run on clutches or transmissions that might be serious if the stock on hand were inadequate or not kept up.

Repair parts are sometimes sent out by American Express, parcel post or air mail upon receipt of a telegram or telephone call from where they are needed. There are times when a maintenance truck is sent all the way from Flushing as far as to Kansas or Tennessee to bring vital parts and to return with a load of parts to be rebuilt. It all depends upon the urgency.

In addition to parts, the Flushing shop has two 6-cylinder and two 4-cylinder replacement Diesel engines on hand and maintains a stock of used and re-capped tires and a few new ones. All truck batteries are charged there.

Repair and maintenance are necessary, but all precautions are taken in the operation of the trucks to prevent breakdowns and premature failure. Lubrication and tire maintenance are the job superintendent's responsibility. Every truck is checked over each night and one man goes over each truck from stem to stern in a definite sequence to lubricate it and check it over. In this way each one is lubricated at least once a week. Crankcase oil is changed twice a month. Tires are checked daily for inflation and cuts.

Batching plants are checked over completely and overhauled after each job and needed parts for them also come from Flushing, N. Y. A separate maintenance crew does the work on the plants, also out of New York. Just as equipment is standardized, so are operating supplies. All tires are furnished by the General Tire Co., using standard tires on the front wheels and heavy duty on the rear wheels. All lubricants are furnished by the Kendall Oil Co.

## Testing, etc.

Aggregates and the concrete on the various jobs are subject to the approval of the contractor or Government inspectors. A record is kept of every mix on these big jobs. Test reports are obtained from laboratories employed by the contractors. Standard portland cement is generally used and very rarely are admixtures specified. Pozzolith has been added occasionally when required by the contractor. Aggregates come under Government specifications and usually have a top size of 1 1/2 in., for general construction, and 3/4 in., for other pours such as for powder storage igloos.

## Conclusion

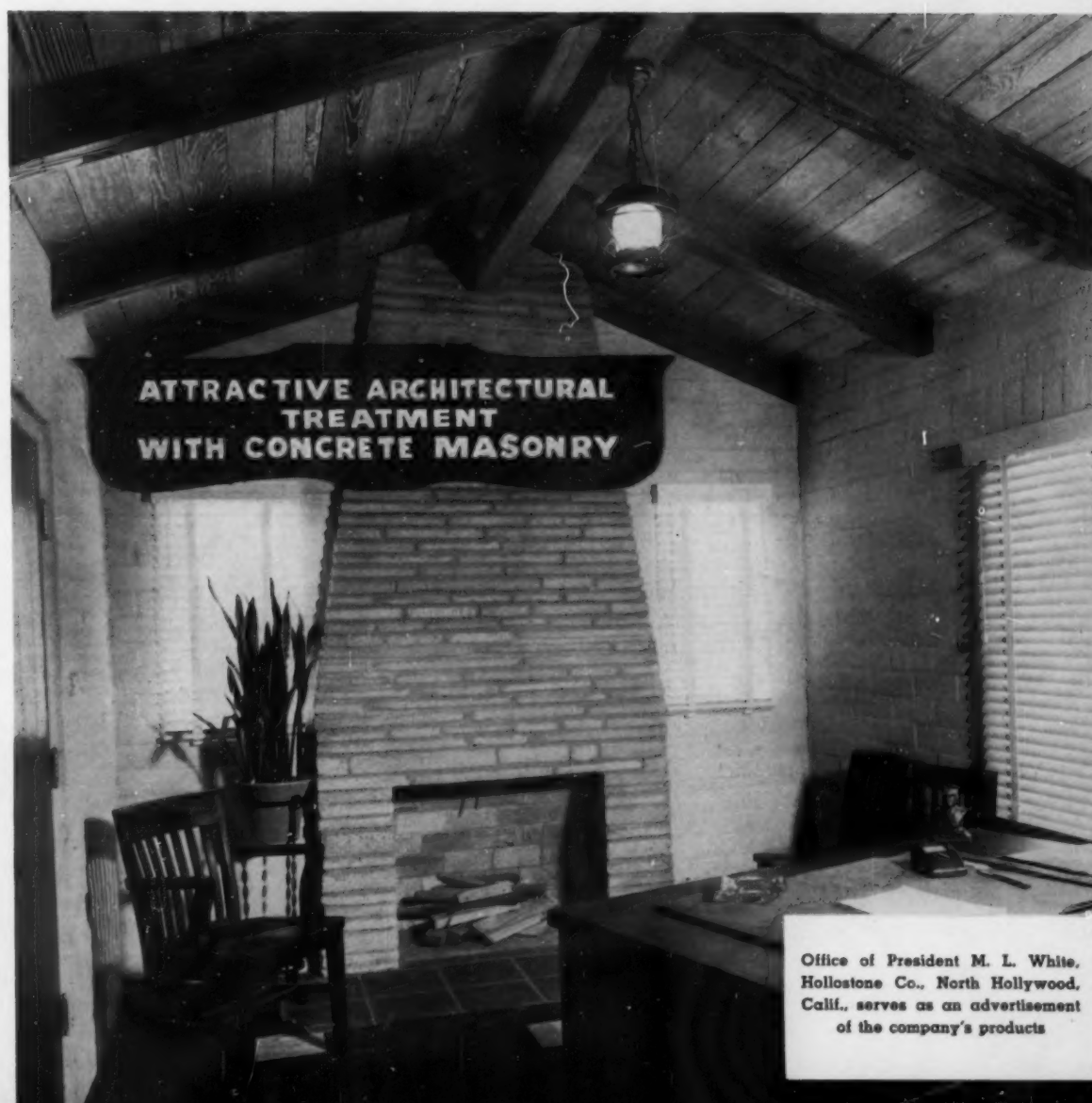
Whether this type of nation-wide contracting will become more generally used in post-war public works programs will be a question that only time can answer. Certainly it would be a means of getting the preparation of concrete into the hands of experienced, responsible concerns whose product can be guaranteed to be superior. The large concrete projects need not be handled in the old-fashioned way of mixing on the job, with its lack of controls, when up-to-date methods of control and definiteness can be obtained by responsible ready-mixed concrete operators.

## Sell Lime Concern

THE CHAZY MARBLE & LIME CO., Plattsburgh, N. Y., has been sold by the Delaware & Hudson Railway Corporation to Ryan Brothers, Plattsburgh coal dealers, who are now operating the business. Marshall Prosser, former superintendent of the Chateaugay Ore & Iron Co. furnace at Standish, is the manager. The lime company was purchased by the railway interests to supply flux for its steel furnaces at Standish which were dismantled several years ago. Production of lime will be stepped up by the new owners to meet the heavy demand.

## ROCK PRODUCTS

# CONCRETE PRODUCTS AND CEMENT PRODUCTS



ATTRACTIVE ARCHITECTURAL  
TREATMENT  
WITH CONCRETE MASONRY

Office of President M. L. White,  
Hollostone Co., North Hollywood,  
Calif., serves as an advertisement  
of the company's products

## MATERIAL HANDLING



To the left: New plant of the Hollystone Co., North Hollywood, Calif., showing truck dumping into aggregate bins. To the right: Attractive office building of the company made with Hollystone units

## Roller Conveyors Speed Block Production

New concrete products plant of the Hollystone Co. has efficient aggregates handling system

**T**O PROVIDE a more efficient method of handling aggregates to the concrete tile machine, M. L. White, president of the Hollystone Co., North Hollywood, Calif., built an entirely new plant across the highway from the old location. The new plant also is a more desirable place in which

By RALPH S. TORGERSON

to work, and the storage yards offer ample room to stockpile units being cured under dampened burlap bags.

Another advantage of the new site was its location at the intersection

of two highways. An attractive office building was erected at this point, using the company's concrete tile units. The building itself serves as an advertisement of the company's products and the architectural treatment which may be employed in their use in construction. Illustrations show



Left: Unusual arrangement of chutes from steel aggregate bins and special welded hopper design for feeding sand, gravel, and cement into mixer. Note water tank on platform which accurately measures out water to mixer

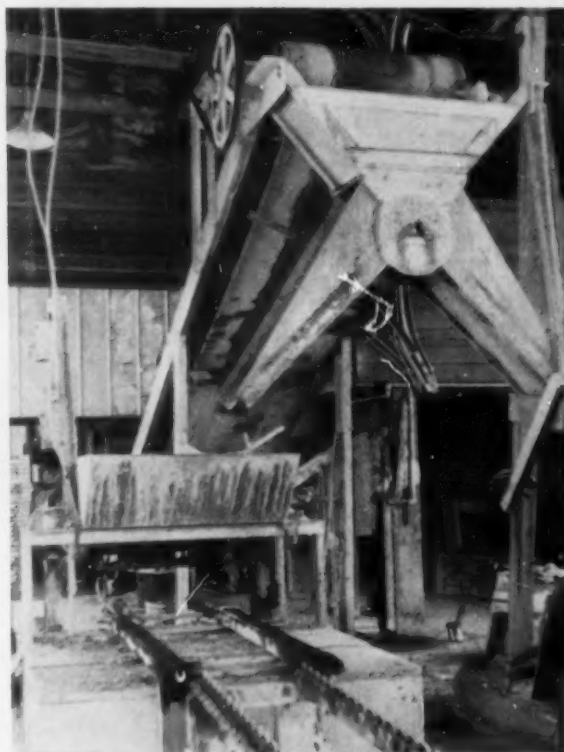
Below: Other side of mixer, showing spout which directs concrete to short inclined conveyor which carries it to pants-leg chute and hopper supplying concrete to the vibrating block machine



## MATERIAL HANDLING



Above: Special truck equipped with roller conveyor section and pneumatic-tired wheels for hauling units to the curing yards



Right: Conveyor which carries concrete from mixer to hopper and pants-leg chute feeding vibrating block machine. Note roller conveyor extending out to connect with haulage truck equipped with roller conveyor section

both exterior and interior views of the office building and the plant.

Aggregates, uncrushed pea gravel and plaster sand, are trucked to the plant. Trucks move up an incline to the top of the plant and dump into steel hoppers. Advantage has been taken of the space provided below the incline for the construction of a room which is devoted to the manufacture of plaster plaques, an entirely separate business. The walls of concrete masonry and the reinforced concrete roof support the roadway. A steel pipe guard rail has

been installed along sides of roadway.

The welded steel storage bin for aggregates holds pea gravel in one compartment and plaster sand in the other compartment. As the bin has a bottom with a 45 deg. slope, aggregates flow easily through gate-controlled steel chutes welded to the underside of the bin. The chutes point directly to a large steel hopper which is designed to hold sufficient aggregates for a batch in the 21-cu. ft. Smith mixer, shown in one of the illustrations. Water for each batch is accurately controlled by

means of a measuring tank located on a platform above the large mixer.

From the mixer, the concrete is moved up a 30-in. Link-Belt conveyor at an angle of nearly 45 deg. to a two-way steel chute. No difficulty is experienced in handling concrete at this angle of slope as the concrete is a relatively dry mix. At the present time only one leg of the chute is used, but the concrete base has been poured for a second tile machine. The conveyor is controlled by switches at both the mixer and the tile machine.

This machine is Mr. White's invention, and its operation was described in considerable detail in *Rock Products*, February, 1940, pp. 60-61. Briefly its operation is as follows:

Concrete from the chute drops to a table hopper in front of the mold box. After the operator fills the mold with a hoe, it is vibrated, the surplus concrete being returned to the table hopper by means of a strike-off blade. Pallet clamps are set, and operation of the latch lever permits the mold to rotate 180 deg. and places the pallet on the downside of the mold. Pallet and concrete tile are stripped downward by a slight pressure of the hand facilitated by momentarily starting the vibrating mechanism. Another turn of the hand releases

(Continued on page 117)

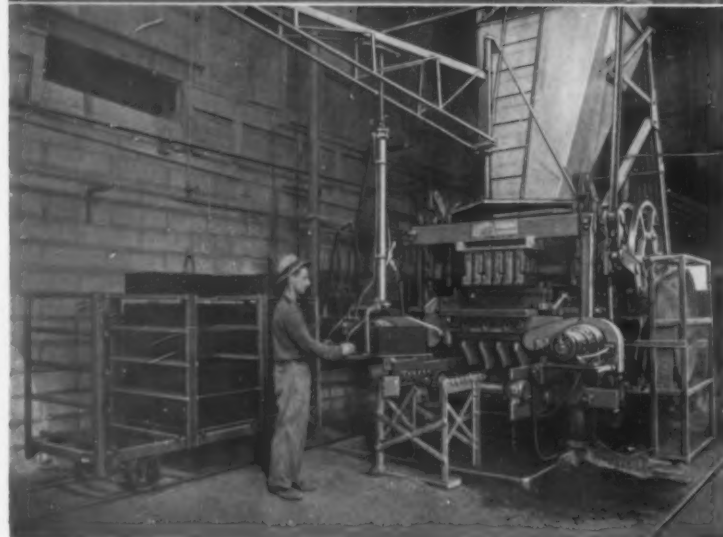


Storage yard with wide aisles between a large quantity of stacked units of various sizes permits efficient handling and allows time for curing

# LEADERS in the Concrete Products Industry\*



**H. P. DOMINE**  
President  
Domine Builders Supply Co.



Domine Builders Supply Co. of Rochester, N. Y., has been prominent in the manufacture of concrete blocks for many years in that area. They have been operators of Besser Concrete Block Machines for ten years. They installed a Besser Super Vibrapac in October, 1941. The large production turned out by their Vibrapac in two daily shifts of 10½ hours each has been supplying blocks for war building construction on some of the large government projects in and near the Rochester area.



This is the fourteenth of a series of advertisements featuring leaders in the concrete products industry who have installed Besser Vibrapacs to step up production of high quality concrete masonry units. Reprints of previous advertisements sent on request.



— using Besser Plain Pallet  
**VIBRAPACS**  
in War Production

# Help for every Products Man

## At the TWO-DAY Wartime Conference of the NATIONAL CONCRETE MASONRY ASSN.

**CHICAGO • February 16-17**

Come to Hotel Sherman, Chicago, February 16 and 17 for the two-day Wartime Conference of the National Concrete Masonry Association. You don't have to be a member of the N.C.M.A. to attend this important meeting. Every concrete products manufacturer in the United States is welcome and urged to be present.

Learn how other men in the products industry are solving their wartime problems. You'll have every opportunity at the several round-table sessions to hear important production and distribution problems discussed and have plenty of chances to ask your own questions and put up your own problems for discussion and helpful advice.

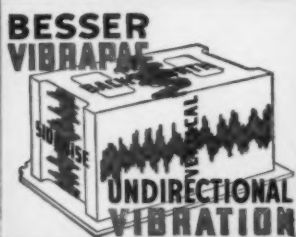
Washington officials of WPB and other important government departments will be present to give you first hand information regarding priorities, allocations and related subjects. You will have an opportunity to ask questions and get authoritative answers.

See the many new wartime products that concrete products plants are turning out. See them explained and demonstrated by the men who are keeping their plants busy with these new products. If you have developed a new concrete product, bring it to Chicago in February to show the industry what you are doing.

Learn at first-hand about the important new promotion program developed for the concrete products industry to increase its share of the war construction program and cash in on these gains in post-war markets.



What you can learn in these two important days can vitally affect the success of your operations in 1943. Plan now to come to Chicago, February 16 and 17.



Unidirectional vibration under Flam patents (other patents pending) was employed to make the first vibrated blocks ever produced commercially. The Besser Vibrapac combines unidirectional vibration with the exclusive Besser Plain Pallet principle. Users of these machines are fully protected under Besser and Flam patents.

## See THE BESSER PICTURE

This completely new edition of the popular Besser Motion Picture, so well received at previous meetings of concrete products manufacturers, will be shown several times during the Wartime Conference at Chicago, February 16 and 17.

Here is a complete and fascinating motion picture record of the concrete products industry at work for war during the year just ended.

You would have to travel thousands of miles at a cost of hundreds of dollars to see what this film will show you in thirty minutes.

**See it in Chicago February 16 and 17  
DON'T MISS IT!**

Under wartime conditions your Besser representative can't get to see you as often as you might like. We hope to see all of our friends in Chicago on February 16 and 17. Please make our headquarters in Hotel Sherman your frequent meeting place during the Conference. You'll have a chance to meet owners of Besser equipment and they'll be glad to tell you what these most modern and efficient machines are doing for them. And we'll be glad to tell you how we are planning to give you even better equipment and service after the war.

**We urge you to make hotel  
reservations early**

## BESSER MANUFACTURING CO.

201 Forty-Third St.

Alpena, Mich.

*Complete Equipment for Concrete  
Products Plants*

**THE SAVING IN PALLET COST WILL PAY FOR  
A BESSER VIBRAPAC PLAIN PALLET STRIPPER.**

## SPECIALTIES

# Make Keel Blocks for Shipyards

Concrete products manufacturers in the East pool manufacturing facilities to handle war orders, convert production from construction to specialties needed in the war effort

**I**N NEW YORK AND NEW ENGLAND the production of concrete products has increased or decreased, depending on the nearness of the manufacturer to centers of war production. In gen-



Attractive curbing units made by Nelson Cement Stone Co. have large aggregate exposed on the curved face

eral it is expected that in this area the total volume will exceed that of 1941.

Western New York has been the scene of much industrial, military and naval construction. At a Naval Training Station in New York, portable block plants were set up by Sidney Quimby of Chappaqua, N. Y., and Walter Decker of Rockland Concrete Products Co., Ridgefield, N. Y., to supplement the supplies of units from the Syracuse and Rochester areas. Approximately 3,000,000 units were required for this project. Construction of a Naval Supply Depot in this area required the pooling of an order between The Schenectady Cast Stone Co., the Albany Block & Supply Co., and the Ramloc Stone Co.

In Connecticut, another center of war production, The Hartford Concrete Units Corp., and the Hamden Building Tile Co., have cooperated so that all projects in the State were supplied the necessary masonry units to permit uninterrupted construction. Products manufacturers have risen to

the demands of war construction in this region.

With all of this activity these companies have been foresighted enough to foresee a decrease in construction. In some areas this has started and the switch to specialties and special uses of standard units has been pushed by promotional campaigns. In Hartford and New Haven, Conn., demonstration concrete masonry fences for plant or equipment protection will be erected. The Hamden Building Tile Co. has sold units for some of these walls to power companies. The Universal Concrete Pipe Co., Rochester, N. Y., is manufacturing heating pipe ducts and precast septic tanks for local housing developments. Shower bath receptacles are being made by the Nustone Products Corp., at its New Jersey, Connecticut and New York plants. The Flat Metal Manufacturing Co., Long Island, N. Y., and "believe it or not," the Federal Seaboard Terracotta Co., New York, N. Y., are bolstering the clay products business with concrete products sales.

The following list of manufacturers of specialties gives a better idea of how eastern producers have adjusted themselves to the changing market conditions:

### MANHOLE COVERS AND FRAMES

#### Connecticut

\*New Haven, Dextone Co.

#### Massachusetts

\*Alstone, Cambridge Cement Stone Co.

\*\*Braintree, Nelson Cement Stone Co.

#### New York

\*\*Bedford Hills, Bedford Hills Concrete Prod. Corp.

\*\*Depew, Calbe Guide Rail Construction Co.

\*Menands, Norwalk Vault Co.

New York City, Metropolitan Stone Products Co.

New York City, Academy Cast Stone Co.

\*\*New York City, Federal Seaboard Terracotta Co.

\*\*\*Rochester, Goodstone Mfg. Co.

\*\*Rochester, Universal Concrete Pipe Co.

Yonkers, Colonial Art Stone Co. Malone, Malone Concrete Products Co.

\*Have molds. \*\*Have manufactured units.

#### New Jersey

Berlin, Formigli Architectural Stone Co.

Westmont, W. N. Russell & Co.

Westmont, Paul Cast Stone Co.

East Orange, Multiplex Concrete Products Co.



Large stocks of keel units are kept in stock by Nelson Cement Stone Co. to meet heavy demands from the ship yards



Concrete slabs used for capping piles are made in considerable volume by Nelson Cement Stone Co. Note hoist for handling

#### WASH TRAYS

Nustone Products Corp., Kingston, N. Y.; New Haven, Conn., and Tena-fly, N. J. plants.

Buffalo Wash Tray Works, Buffalo, N. Y.

Ribstone Mfg. Co., Leroy, N. Y.

#### SHOWER BATH RECEPTACLES

Nustone Products Corp., (see above.)

Buffalo Wash Tray Works (see above.)

Ribstone Manufacturing Co. (see above.)

Fiat Metal Manufacturing Co, New York, N. Y.

Federal Seaboard Terracotta Co., New York, N. Y.

#### TANKS—OIL, ETC.

Fred Washburn (small tanks), Hudson, N. Y.

Jas. A. Monroe & Sons (large and prestressed), North Attleboro, Mass.

#### PRECAST SEPTIC TANKS

Bedford Hills Concrete Products Co., Bedford Hills, N. Y.

Universal Concrete Pipe Co., Rochester, N. Y.

#### HEATING DUCTS

Universal Concrete Pipe Co., Rochester, N. Y.

#### COUNTER WEIGHTS—BALLAST BLOCKS

Albany Block & Supply Co., Albany, N. Y.

Concrete Units Co., Bronx, N. Y.

Hudson Concrete Block Co., Croton on the Hudson, N. Y.

#### KEEL BLOCKS (Ship Yards)

Nelson Cement Stone Co., Braintree, Mass.

The Nelson Cement Stone Co., Braintree, Mass., is selling large precast concrete keel blocks to replace timber and steel for use in foundations for shipways at the Fore River Ship Building Corporation's yards. Oberlin S. Clark, manager of the concrete products company, stated that these units made up about 75 percent of the volume of business done by the company's plant.

Little merchandising was necessary to sell the shipbuilders concrete units 1- x 1½- x 10-ft. that could be used in a manner similar to the use of cribbing. Relieving the need for more critical materials was a fine contribution to the war effort, and the volume of concrete required for these units materially bolstered the products business at a time when building construction started to decrease. Other manufacturers near ship yards may be able to develop a similar business. Mr. Clark's company also is manufacturing manhole covers designed for light, medium and heavy traffic.

#### Add Mixer Truck

J. R. BORGELT Co., Ottawa, Ohio, has added another transit mixer truck to meet the increasing demands for ready mixed concrete. This company has been very active in developing business from farm communities.

#### Busy on Airport

SHELTON CONCRETE Co., Shelton, Wash., has been busy supplying ready mixed concrete for an airport. Foundations for about 50 buildings of various sizes are involved.

#### Material Handling

(Continued from page 113)

the pallet from the mold, and the pallet holding four tile is pushed onto a continuous chain roller conveyor. To resume the cycle of operation, the mold is merely revolved back into position where it is automatically locked ready for action.

Concrete units are hauled from the tile machine to yard curing storage and stockpiles by the use of an interesting haulage truck. It comprises a 20-ft. section of roller conveyor supported on four pneumatic-tired wheels from a light car model. The truck is backed up to and placed in line with the fixed roller conveyor on the tile machine. Finished concrete units on the pallets move over the truck roller conveyor, and when it is loaded, another truck is backed into place and the loaded truck is moved to the yard. Empty wooden pallets are stacked in piles on another section of roller conveyor converging at an angle toward the tile machine within convenient reach of the operator.

Various sizes of units are made on the Hollystone machine, but the 4- x 8- x 12-in. size is the standard dimension. Capacity of the single machine is 3000 units per day with a crew of two men.

#### Farm Market for Concrete Products

ALTHOUGH CONSTRUCTION of new farm homes has fallen off sharply due to wartime restrictions, the War Production Board is approving hundreds of priority requests for permission to build barns, silos, poultry houses and other agricultural buildings needed to meet the nation's expanded food requirements. Farm building projects, according to recent advices, are not limited to a value of \$1000. Many applications providing for more expensive construction are being approved by the WPB if they specify masonry products to reduce lumber requirements and if the construction is essential to permit farmers to meet production goals.

#### Colored Moving Pictures Of Concrete Block Homes

GRAYSTONE CONCRETE PRODUCTS Co., Seattle, Wash., recently displayed colored motion pictures, depicting the use of concrete products on housing projects in Seattle and surrounding communities, at a luncheon meeting of the Seattle Construction Council. Bob Condon of Graystone explained various features of the construction.

## CONCRETE PIPE

# Radial System for Pipe Manufacture

Spokane Concrete Pipe Co. develops special devices for convenient handling of pipe and forms

ONE of the most efficient concrete pipe plants in the Pacific Northwest is operated by the Spokane Concrete Pipe Co., Spokane, Wash. It has been a process of evolution rather than the construction of a complete new plant, new ideas and equipment being introduced to meet changing demands.

There are three pipe machines located at one end of a central casting room with the curing rooms at each side to reduce the time involved in transporting pipe from the machine to the curing room. Aggregates (sand and gravel) for the pipe are placed in a large compartment bin at the top of the plant by bucket elevator. Chutes radiate from the bin to measuring hoppers and thence into mixers on a platform above the three pipe machines which are arranged on the floor in a semi-circle about the platform. Cement in sacks is also placed on the platform within convenient reach of the mixer operators. The plant has operated at a peak capacity of 140 cu. yd. of pipe per day in two 10-hr. shifts, making pipe for Army airports.

Pipe machines include two new units; a No. 6 Tuerck-Mackenzie making up to 60-in. pipe, and a No. 3 Sherman producing up to 39-in. pipe. The third unit is an older type



"Jeep" converted from lumber piler which is used to haul pipe up to 60-in. Mr. Simmons, plant manager, at the controls

Tuerck-Mackenzie making up to 30-in. pipe. A 14 cu. ft. Stearns mixer is used to supply concrete for the new Sherman pipe machine, and 14-cu. ft. machines of the same manufacture. If all three machines operate simultaneously there is ample room to handle forms and cast pipe with this radial arrangement of the pipe machines.

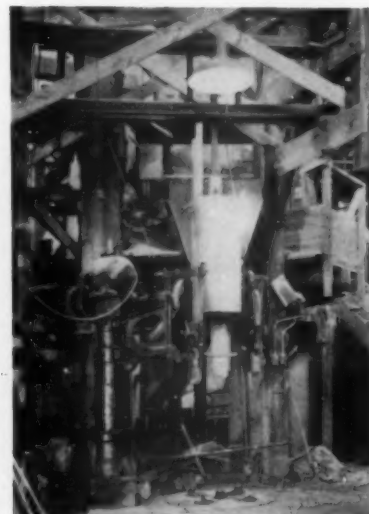
An interesting development of the Spokane Concrete Pipe Co. is a sectional pipe casting core. The sections are bolted together to form one

solid core. One-piece cores generally wear at the bottom and have to be scrapped long before the upper part shows any appreciable wear. With the sectional type core, the worn section may be placed on top as a little wear here does not affect the pipe

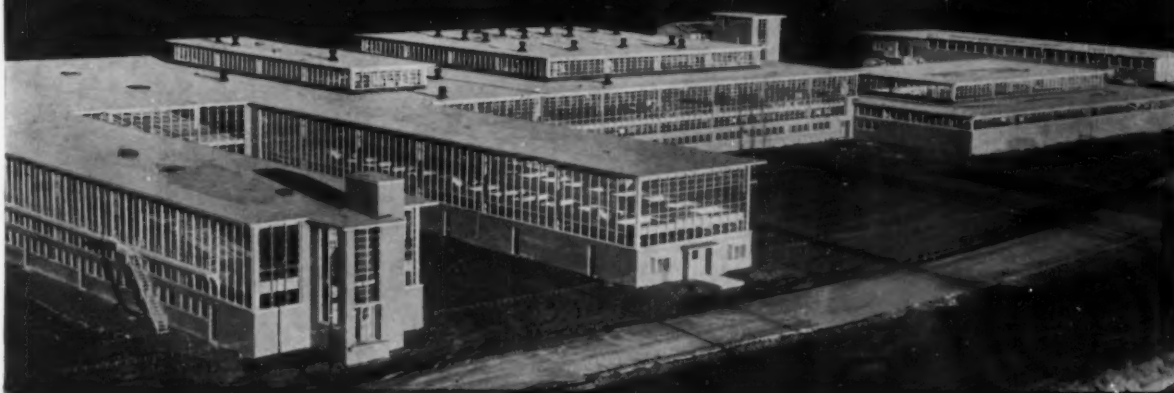
(Continued on page 120)

Close-up of pipe machine for 30-in. pipe. Note chute back of steel core for handling concrete from mixer

Two types of concrete pipe machines with mixer platform above. The machine to the left is for 60-in. pipe, and the one to the right is for pipe up to 30-in.



For this Mid-Western U. S. Army Ordnance Plant, Cinder Concrete Products, Inc., furnished 300,000 8x8x16 and 400,000 4x8x16 Stearns Vibrated Cinder Blocks. Exterior walls faced with clay brick, all interior wall surfaces painted.



# STEARNS VIBRATED BLOCKS *build a trouble factory*

It is making trouble for the Axis.

And while Stearns customers are busy supplying vibrated concrete masonry units for necessary war construction, the Stearns plant in Adrian is working 168 hrs. a week on war production. The things we make now don't look anything like the concrete block machines we normally build but they do a real job on the fighting fronts!



# STEARNS

MANUFACTURING CO. - ADRIAN, MICH.

GENE OLSEN, PRESIDENT

If your Stearns Block Machine, Brick Machine, Mixer or Skip Loader needs new parts, wire us. We have made a pretty good record in helping Stearns customers out in the pinches.



## "ANCHOR"

### Complete EQUIPMENT AND ENGINEERING SERVICE

Equipment for all phases of manufacturing concrete cinder block and other lightweight aggregate units. Our engineering service for new plants and modernizing old ones will help you operate more economically.

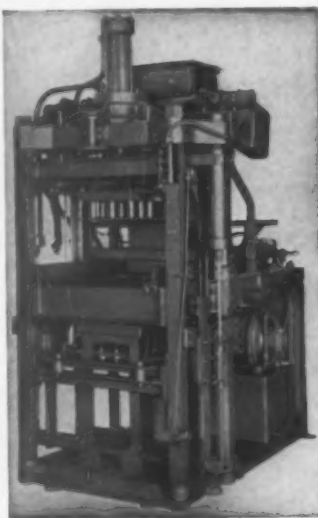
Hobbs block machines, Anchor tampers, Anchor Jr. strippers, Stearns power strippers, Stearns Joltcrete, Stearns mixers, pallets, Straublox Oscillating attachments, etc.

Repair parts for Anchor, Ideal, Universal, Stearns, Blystone mixers and others.

**Anchor Concrete Mch. Co.**

G. M. Friel, Mgr. COLUMBUS, OHIO

## HYDRAULIC VIBRA-PRESS



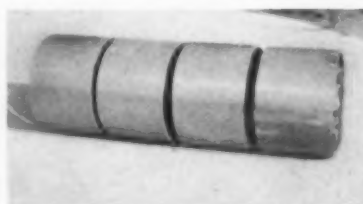
A High Production Machine  
Making Blocks which are  
Demanded by the Contractor  
Endorsed by the Architect  
Desired by the Mason

**The KENT MACHINE CO.**  
CUYAHOGA FALLS, OHIO

diameter to any noticeable extent. It also is an easy matter to insert a new core section. The core sections were cast and machined at a local foundry.

### "Jeep" for Hauling Pipe

Another interesting piece of equipment is the "jeep" for hauling large pipe and forms from the plant to the yard. A Willamette-Hyster lumber piler, equipped with three rubber tired wheels and driven by a McCormick-Deering gasoline engine, was converted to make a very ingenious haulage unit. As shown in the illustration, the lumber piler lifting arms have been removed and welded to the lifting frame in a vertical position with arms bowed inward. A cable and power driven hoist are used to en-



Sectional type steel core for making concrete pipe; worn sections can be replaced

circle and hold the pipe within the arms. The power-driven lifting frame can raise the pipe a height of 5½ ft.

An older type of haulage equipment used for this purpose but now largely employed for loading pipe on trucks is a White truck chassis with a derrick made of pipe sections that was

originally designed for telephone pole installations.

Carl Warren, president of the Spokane Concrete Pipe Co., has been the energetic genius who has sponsored all these improvements.

## Cement Production Continues Increase

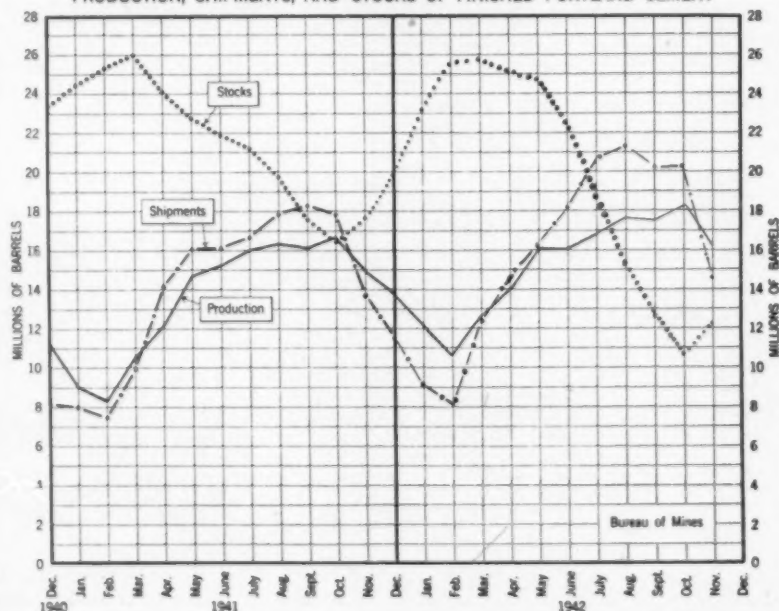
BUREAU OF MINES reports that the portland cement industry in November, 1942, produced 16,241,000 bbl., shipped 14,627,000 bbl., and had in stock at the end of the month 12,231,000 bbl. Production and shipments of portland cement in November, 1942, showed increases of 8.8 and 6.6 percent, respectively, as compared with November, 1941. Portland cement stocks at mills were 30.7 percent lower than a year ago.

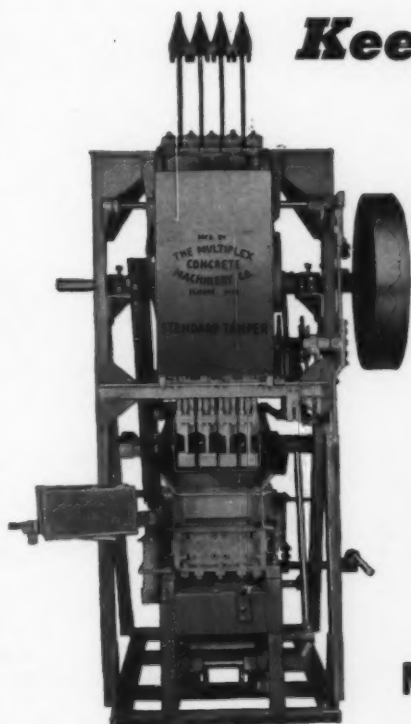
The total production for the eleven months ending November 30, 1942, amounts to 168,562,000 bbl., compared with 150,192,000 bbl. in the same period of 1941, and the total shipments for the eleven months ending November 30, 1942, amount to 176,244,000 bbl., compared with 155,997,000 bbl. in the same period of 1941.

In the following statement of relation of production to capacity the total output of finished cement is compared with the estimated capacity of 153 plants at the close of November, 1942, and of 157 plants at the close of November, 1941.

	RATIO (PERCENT) OF PRODUCTION TO CAPACITY					
	November 1941	November 1942	Oct. 1942	Sept. 1942	Aug. 1942	Aug. 1941
The month..	73.0	80.0	87.0	87.0	85.0	85.0
12 months ..	65.0	74.0	73.0	73.0	73.0	73.0

### PRODUCTION, SHIPMENTS, AND STOCKS OF FINISHED PORTLAND CEMENT





## ***Keep Your MULTIPLEX Equipment Working***



Uncle Sam has provided you with good priorities to enable you to keep your MULTIPLEX machines in good running order.

Even though we are as busy as can be on war production orders, we are also ready to furnish necessary repairs and replacements on these priorities to keep your MULTIPLEX equipment ship-shape. Write or wire us if you need our assistance.

### **STANDARD TAMPER**

The MULTIPLEX 8-bar Standard Tamper produces from three to four 8 by 8 by 16 in. units a minute. Time-feeding while tamping and hopper agitation make better units. Available in hand or power stripping. Strike-off hopper assures a smooth top.



**MULTIPLEX CONCRETE MACHINERY CO.**

ELMORE • OHIO



**You have to  
look to  
ROCK PRODUCTS  
for Leadership  
in the Industry**



### **MANY FEATURES OF MERIT IN FAVOR OF "COMMERCIAL" PALLETS**

PERMANENT EQUIPMENT—WE DO NOT KNOW OF A PRESTEEL PALLET CUSTOMER REPLACING WITH ANY OTHER TYPE.

LIGHT AND EASY TO HANDLE AND STORE.

MAKES A FIRM ANVIL FOR TAMPING—PRESSED COLD IN DIES—UNIFORM—RECOMMENDED BY BLOCK MACHINE MAKERS—ASK US OR YOUR MACHINE MAKER.

MANY DIFFERENT STYLES AVAILABLE.

**The COMMERCIAL SHEARING &  
STAMPING COMPANY**

YOUNGSTOWN, OHIO

## **Buys Block Machine**

LAYRITE CONCRETE PRODUCTS CO., Spokane, Wash., has made improvements costing about \$35,000, including a vibration type block machine. The company is now testing a new type of acoustical block.

## **Wins Lawsuit**

THE BELOIT CONCRETE STONE CO., Beloit, Wis., was recently awarded a \$2,237 judgment against the La Crosse Concrete Supply Co., to cover rental of trucks and mixers owned by the Beloit company. The machines were used in an army camp con-

struction job. A rental of \$1,558 was paid by the La Crosse company for the use of the machinery, according to the newspaper report.

## **Pittsburgh Ready Mix Producer Is Busy**

VANG READY MIX CONCRETE CO., Pittsburgh, Penn., has been extremely busy supplying concrete for a number of defense housing projects and many vital industrial structures. Two of the housing projects involved over 1000 living units each. In addition to ready mixed concrete mixer trucks, the company also uses a portable

batching, mixing, and elevating unit known as the Mixermobile for factory construction. George Vang, president of the company, is also financially interested in the Iron City Sand and Gravel Co., and the Vang Crushed Stone Co.

## **Dust Case Decided in Favor of Cement Company**

SUPERIOR PORTLAND CEMENT, INC., Seattle, Wash., recently won a very important decision in the Washington Supreme Court which reversed a decision of a lower court which had granted damages to a Mr. Powell alleged to have been caused by stack dust falling on his property. The high court ruled that to have affirmed the judgment in Powell's favor would "encourage litigation which would unreasonably harass industry and likely bankrupt many industries in this State which it is the policy of the law to protect within reason." The court further ruled that the escape of dust from the stacks was not caused by any neglect of the company. It also commented that the condition existed when Mr. Powell bought the house in 1934. Since he purchased the property in a manufacturing community he is not entitled to compensation because of dust inseparable from industrial activity, the court held.

YOSEMITE PORTLAND CEMENT CO., Merced, Calif., has advised the Merced Chamber of Commerce dust committee that it could not install dust control equipment at this time as priorities would not be granted for its purchase. President Emery Wishon pointed out that a good share of the dust was caused by nearby construction work.

UNIVERSAL ATLAS CEMENT CO. was represented recently by Richard Dittmar, superintendent of its Hudson, N. Y., plant before the grand jury, defending the company in a complaint that dust emitted by the plant constitutes a public nuisance.

## **Pavement Yardage**

AWARDS of concrete pavement for November, 1942, have been announced by the Portland Cement Association, as follows:

	Square Yards Awarded During November, 1942
Roads .....	1,405,967
Streets and Alleys .....	1,443,972
Airports .....	5,820,719
Total .....	8,670,658



## **UNCLE SAM KNOWS HIS BRICKS . . .**

Jackson Concrete Brick machines have been enlisted for government work. And for good reason. . . .

Jackson Brick machines are continuous in operation. They fill one pocket, compress one brick and remove one all at the same time. They produce up to 28,000 concrete bricks in an eight-hour day. They eliminate the need of costly pallets. Saw-blade steel lined pockets and high pressure curing insure a clean, sharp-edged brick.

For information regarding used units available, write to Jackson and Church Co., Saginaw, Michigan.

**JACKSON AND CHURCH COMPLETE  
BRICK-MAKING PLANTS**

**JACKSON & CHURCH COMPANY • SAGINAW, MICHIGAN**

## Move Cement with Air From Silos to Ships

New bulk loading plant of Permanente Corporation handles up to 44,000 bbl. of cement into ships in 26 hr.

By RALPH S. TORGERSON

**F**ACED with the problem of providing a rapid means of loading bulk cement into ocean-going ships, the Permanente Corp. designed a pneumatically operated plant. Up to 44,000 bbl. have been loaded into ship holds in 26 hours.

Cement is transported in huge bulk cement trucks from the cement plant to the ship loading plant, where it is dumped into a receiving hopper in a pit below ground level. Operating on a narrow-gauge track beneath the hopper is a Type H-10 Fuller-Kinyon pump which elevates the cement through a pipe to six concrete silos above.

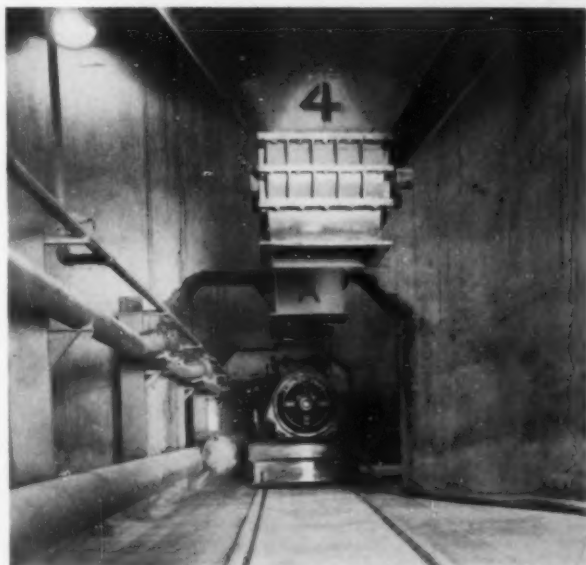
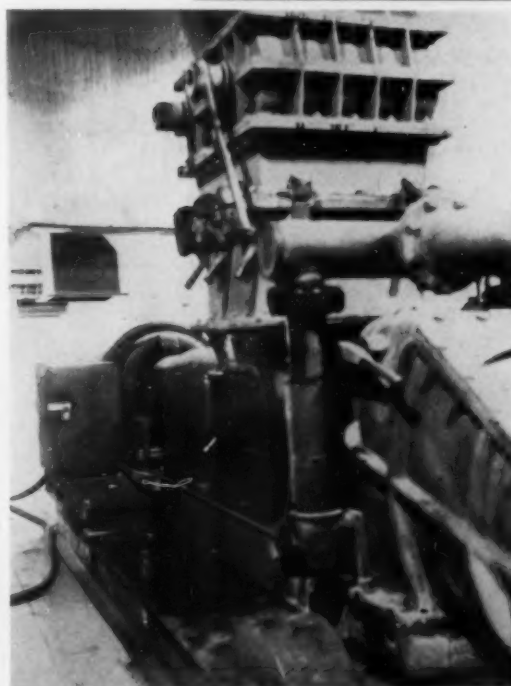
Each of the silos has a capacity of 10,000 bbl. with an additional capacity available in two interstices or star silos which are not used at the present time as they do not have

One of two cement pumps electrically propelled over track under silos

sloping bottoms. Main storage silos have bottoms with a 58-deg. slope. Each silo feed hopper has a double Fuller rotary valve. At the top of the silos, there is a Reese bag filter, all silos being interconnected so a suction is pulled. The Reese fan is driven by a U. S. motor.

In the tunnel below the silos at

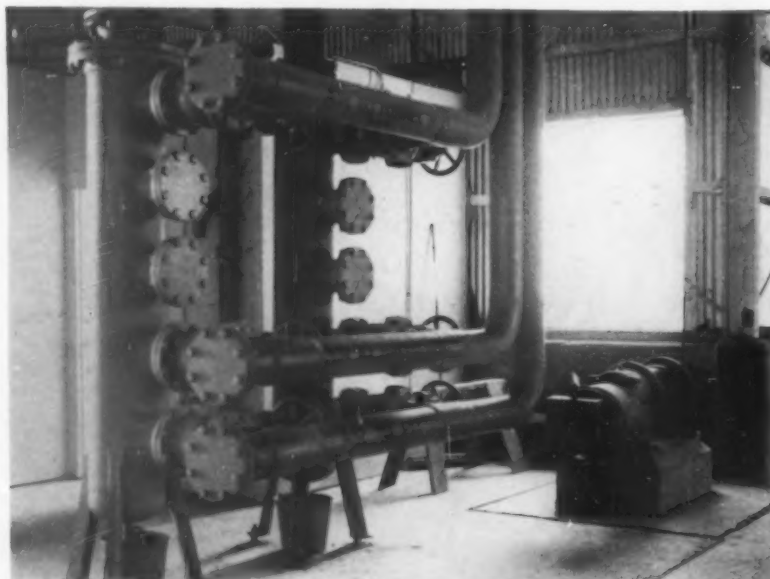
ground floor level is another Type H-10 Fuller-Kinyon pump to pump the cement from the silos to the holds of ships at the docks through fixed pipe lines. This pump also is mounted on a track and may be moved by a power take-off, connected to the 250-hp. G. E. motor, under any of the silo feed valves below the bins.



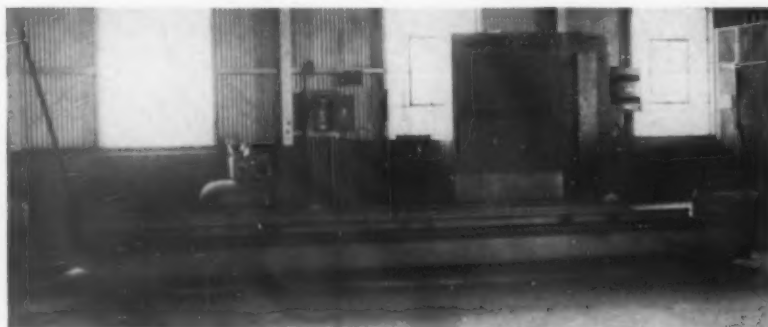
Left: Cement pump which can be shifted over track to cement hoppers beneath silos. Note pipe connections along wall at convenient intervals for pumping cement into ship holds. Right: Cement pump below truck dumping hopper for pumping cement into silos. Pump may be transferred to tracks beneath storage silos by means of hoist and transfer table



Two 250-hp., 2300-volt electric motors drive the two dual compressors supplying air to the cement pumps



Air pipe connections to two tunnels under silos and to pit below truck hopper, and to the right, electrically-operated hoist which raises pump in pit to transfer table



Transfer table which is used in transferring cement pump from pit to tracks below silos



Warning light and safety power cable connection to 2300-volt line

Air pipe connections are fixed within convenient reach of the pump stations for each silo. These pumps have a rated capacity of 1000 bbl. an hour, but they have handled up to 1100 bbl. an hour. Should an overload occur on the pump, a solenoid actuates the air valves that by-pass air into the screw of the Fuller-Kinyon pump, thus relieving the load on the motor. The solenoid valve is operated by car transformers on the power leads to the motor.

A unique arrangement has been provided to permit the use of both H-10 Fuller-Kinyon pumps in the tunnel to load ships. The pump in the pit below the truck loading hopper is moved on its track in line with a heavy steel chain block and tackle supported on a trolley rail from the steel superstructure. An H. C. Wood hoist powered by a 10-hp. U. S. motor raises the pump by means of a heavy cable sling. The pump is then lowered onto a transfer table which carries the pump in line with the track in the second tunnel under the next group of three silos. By this method, a third pump is eliminated.

The pumps are equipped with 250-hp. G. E., 2300-volt, 1200 r.p.m. electric motors and receive air from two stationary Fuller-Kinyon dual C-200 compressors operated by 250-hp. G. E. 2300-volt, 585 r.p.m. motors under full load.

Under the star interstice silos, there is an entrance from each tunnel providing a tool and supply room. As 2300-volt alternating current is used every precaution and safety device is employed to eliminate danger. In one of the illustrations is shown the warning light and safety switch outlet to prevent accidents.

## Controlled Materials Plan

THE WAR PRODUCTION BOARD has issued a 58-p. booklet explaining the new Controlled Materials Plan which is replacing the Priorities System for carbon steel, alloy steel, copper, aluminum, and such other materials as may be added to the list from time to time. The explanation is too long to give here; and the accompanying illustration, which is borrowed from *The Wall Street Journal*, gives the process in a nut shell. If you substitute for "Hull Fabricator," your

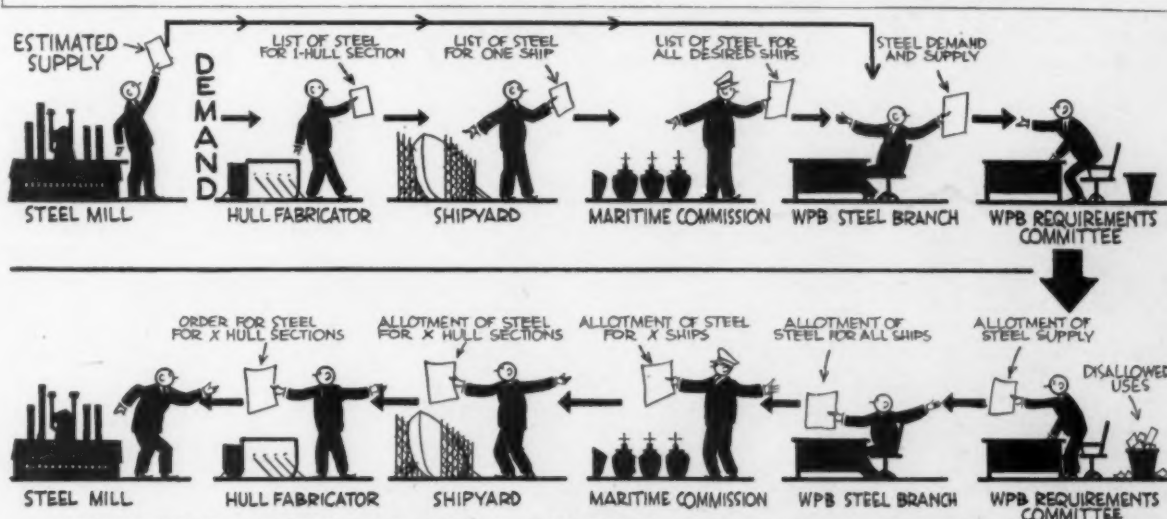
machinery manufacturer and yourself as the "producer of essential aggregates," the picture would be differently departmentalized but the process would be the same.

The steel can be awarded for the manufacture of the equipment or repair part which you may need only through the OK of one of seven Claimant Agencies: (1) War Department; (2) Navy Department; (3) Maritime Commission; (4) Aircraft Scheduling Unit; (5) Office of Lend-

Lease Administration; (6) Board of Economic Warfare; (7) Office of Civilian Supply. Whether the claimant gets the material requested depends on how important the WPB Requirements Committee decides the use of material is to the immediate war program.

The U. S. Department of Commerce *Survey of Current Business* gives the accompanying table to show the details of the Controlled Materials Plan as compared with previous schemes to solve the problem.

### A Flow of Paper, Called Controlled Materials Plan, Will Regulate Supplies Of Raw Materials For Industry Operating Under the War Production Board



RAW MATERIALS FOR INDUSTRY are to be regulated by the War Production Board's new device called the Controlled Materials Plan. The sketch above illustrates the operation of C.M.P. The plan itself is a flow of paper—not actual materials at all. The diagram illustrates the upward and downward tide of papers which, under C.M.P., must all take place before a pound of steel, copper or aluminum can move. The diagram shows what must happen under C.M.P. before the fabricator of a section of the hull of cargo ships can place a firm order for steel to make his sections. The whole procedure portrayed leads to the final picture (the one at the left end of the second row), showing the placing of a steel order by the hull fabricator. After that the actual work of production finally gets under way. After that, steel goes into hulls, hulls go into ships, ships go to war.

—Reproduced from "The Wall Street Journal".

#### Summary of Technical Details of Four Materials Control Plans

Preference Ratings		Branch Allocations	Production Requirements Plan	Controlled materials plan	
Nonextensible	Extensible			Class A products <sup>1</sup>	Class B products <sup>2</sup>
<ol style="list-style-type: none"> <li>1. Procurement agencies place orders for product.</li> <li>2. Prime contractors place orders with subcontractors.</li> <li>3. Prime contractors secure preference ratings from procurement agencies.</li> <li>4. Subcontractors secure preference ratings from procurement agencies.</li> <li>5. Materials orders go to mills and are filled in order of preference ratings.</li> </ol>	<ol style="list-style-type: none"> <li>1. Procurement agencies place orders for product, attaching preference ratings.</li> <li>2. Prime contractors place orders with subcontractors attaching preference ratings.</li> <li>3. Materials orders go to mills and are filled in order of preference ratings.</li> </ol>	<ol style="list-style-type: none"> <li>1. Mills receive materials orders with preference ratings attached.</li> <li>2. Mills inform WPB Materials Branches of their orders, ratings, and proposed monthly shipping schedules.</li> <li>3. Materials Branch approves or alters the mills' shipping schedule thereby allocating the mills' output to certain uses and users.</li> </ol>	<ol style="list-style-type: none"> <li>1. Procurement agencies place orders for product, attaching preference ratings.</li> <li>2. Plants with contracts or subcontracts submit to WPB lists of material requirements, inventories, past material consumption, general pattern of preference ratings, and orders on hand.</li> <li>3. According to supplies available, WPB determines the quantity of materials which may be granted to each company.</li> <li>4. Materials orders go to mills and are filled in order of preference ratings or under Branch Allocations plan.</li> </ol>	<ol style="list-style-type: none"> <li>1. Claimant Agencies<sup>3</sup> submit to WPB their month-by-month materials requirements based on bills of materials from prime and subcontractors.</li> <li>2. According to supplies available, WPB requirements Committee makes month-by-month allotment of controlled materials to each Claimant Agency.</li> <li>3. Claimant Agencies distribute allotments to prime contractors.</li> <li>4. Prime contractors distribute allotments to subcontractors.</li> <li>5. Materials orders go to mills, which make shipment in the month specified in the allotment number carried by each order.</li> </ol>	<ol style="list-style-type: none"> <li>1. Office of Civilian Supply receives requirements for B products from the other six Claimant Agencies.</li> <li>2. Office of Civilian Supply translates product requirements into materials requirements, on basis of bills of materials collected through WPB Industry Branches.</li> <li>3. WPB Industry Branches prepare schedules to meet product requirements, and issue materials allotments to prime contractors.</li> <li>4. Prime contractors distribute allotments to subcontractors.</li> <li>5. Materials orders go to mills, which make shipment in the month specified in the allotment number carried by each order.</li> </ol>

<sup>1</sup> Any product, other than Class B products, involving the use of any of the four controlled materials.

<sup>2</sup> A list of items normally sold on the open market, such as subassemblies and specialized or miscellaneous items of equipment.

<sup>3</sup> War Department, Navy Department, Maritime Commission, Aircraft Scheduling Unit, Office of Lend-Lease Administration, Board of Economic Warfare, and Office of Civilian Supply.

## PLANT EXPANSION

# Making Masonry Cement in Mexico

Cementos Atoyac, S. A., continues  
to extend its operations in Mexico

By ALTON J. BLANK\*

FOR THE PURPOSE of increasing production and expanding operations generally at its main plant at Puebla, Pue., Mexico, and for acquiring the plant and properties of Cementos, S. A., situated at San Pedro de Los Pinos, Federal District, Cementos Atoyac, S. A., recently disposed of a bond issue of \$1,600,000 Mexican Currency (equivalent to \$330,000 U. S.

product on the Mexico City and adjoining markets which was scheduled for September 1, 1942.

Plastocement, S. A., has been formed as an entirely new company with a capital of \$800,000 Mexican currency, and becomes a subsidiary

of the parent company, Cementos Atoyac, S. A. The new company will also operate lime kilns situated at El Salto, State of Hidalgo, where five vertical kilns will supply the necessary burnt lime for the manufacture of the masonry cement Plastocement.

The main Atoyac plant at Puebla, having transferred the manufacture

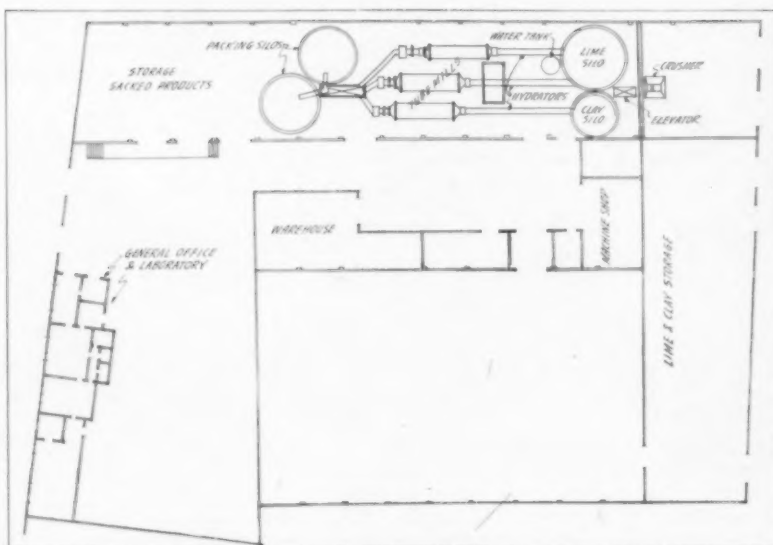


Two-unit plant built expressly for manufacture of masonry cements. A third unit is now being installed

Cy.) through the Mexico City banking firm of J. Lacaud y Cia.

Cementos, S. A., which has since been named Plastocement, S. A., is a two-unit plant built expressly for the production of masonry cements and has a rated capacity of 3000 metric tons monthly. A third unit is being installed to increase this capacity to 4500 tons of the Plastocement brand of masonry cement, and an exclusive license for the Federal District and adjoining States has been obtained from the Cement Process Corporation, New York, to produce masonry cements under the patented processes owned by the latter corporation. John A. Blank, chemical engineer, Cement Process Corporation, is spending several months at the new Plastocement plant supervising tests prior to the placing of the

\* General manager, Cementos Atoyac, S. A.



Floor plan of masonry cement plant showing grinding and packing facilities

of Plastocement to the new factory at San Pedro de los Pinos, D.F., will in future confine its operations at the main Puebla plant to the Atoyac type of general purpose cement it has been producing since 1933, but will continue to produce the second masonry cement "Caloyac" at its small "Indio" plant, situated near the main plant.

## Manufacturing Procedure in New Plastocement Plant

Lime is burnt in shaft kilns and shipped by rail from production point, which is about 65 kilometers from the Plastocement plant. The lime is unloaded from railway cars into trucks which discharge it into a crusher. The crusher reduces it to  $\frac{1}{8}$ -in. and down. Crusher lime is deposited in a silo having 160 metric tons storage capacity.

Siliceous material of volcanic origin is hauled by truck from a quarry located about 2 kilometers from plant. This material is also passed through the crusher and deposited in a silo having a storage capacity of 125 metric tons.

Bulk cement is brought into the plant by truck and dumped into a hopper and elevated to a small bin having a storage capacity of 20 metric tons.

Schaffer Poidometers are situated under the lime and clay silos, and the cement bin.

A mixture composed of about 45

percent caustic lime with 55 percent of siliceous material is fed to the hydrator, at which point an excess of water over that normally required to hydrate the lime, is added. The screw type hydrator operates at a speed of 5 r.p.m., and the duration of the reacting lime-siliceous mixture in the hydrator before reaching the tubemill is about 10 minutes. The hot-moist reacted lime-siliceous mixture is discharged into the tubemill at which point an addition of about 10 percent of cement is made, and the three-component mixture is ground under moist temperate conditions in the tubemill, where further reactions are promoted between the lime with the silica, alumina, etc., of the siliceous material, to a fineness of about 95 percent passing the 200-mesh screen.

The final product as discharged from tubemills is deposited in one or both storage silos having a capacity of about 125 metric tons each. Product is bagged in 50 kilo paper sacks in one-tube packing machines and loaded directly on trucks for distribution to the Mexico City markets. Warehouse for the storage of about 1,000 metric tons of bagged product is located adjacent to packing machines. Plastocement is used as a brick mortar; for rough and smooth wall plastering; as a stucco, and as an addition to portland cements to promote more plastic and workable concrete. Its addition to portland cement also improves the later strength of concrete.

## Personnel

Officials of the new Plastocement company are: President, Julio Lacaud; Director General, Alton J. Blank; Manager, H. M. Ruffini; Superintendent, José Maurer.

Officials of the parent company, Cementos Atoyac, S. A., are: President, Julio Lacaud; General Manager, Alton J. Blank; Office Manager, W. Jenkins; Superintendent, E. A. Porter; Chief Chemist, Oscar Grados; Engineer, Miguel Bravo; Operations and Construction, Francisco Santillana.

## Alcan Highway

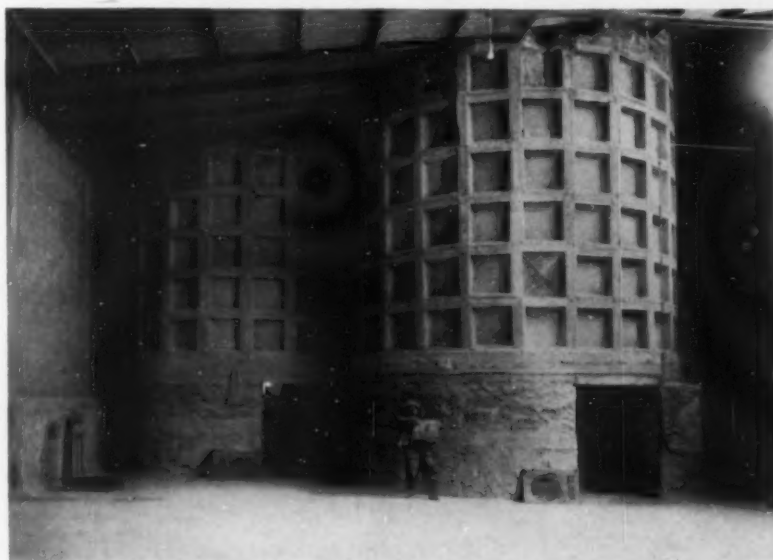
(Continued from page 58)

program calls for much stockpiling of gravel for spreading on steep hills and bridge approaches this winter and for combatting the spring break-up.

Rock excavation will continue in numerous cuts and hillsides where cut-offs and minor relocations are in progress. But working gravel pits in "40-below" weather is something else again! Where winter shovel operation is imperative it will often be necessary to blast into the frost, and thereafter work the face at least 20 hours out of each 24 to keep going. All-night idling of shovel and tractor motors is a "must" to avoid starting difficulties.

## 1943 Plans for Alcan Highway

What the U. S. Army will decide must be done on the Canada-Alaska Highway during 1943 will depend on the military urgency. Certainly at the present time all are agreed on the desirability of extensive widening, grade-reduction, and straightening. Such a program, in conjunction with reconstruction of sections ravaged by the April-May thaw, would greatly increase the tonnage capacity of the highway and permit movement of war goods faster and with fewer trucks and drivers. The Public Roads Administration has completed surveys for a standard heavy-duty gravel or stone road which would include approximately half of the present route. This route has the War Department's tentative approval and the plan is to organize enough civilian construction outfits to complete the reconstruction during the 1943 working season. Reconstruction to high standards, of course, will necessitate large-scale aggregate production for the roadway surface and for concrete in permanent bridges.



Single spout packing machines are fed from unusual type storage bins

## Gypsum Board for Utah Army Project

ABOUT 7,000,000 sq. ft. of laminated gypsum board will be used for roof construction on a large Utah military project. The material specified for the Utah project is a three-ply laminated board fabricated from 1/2-in. gypsum board of ordinary commercial grade.

## Lime Company to Build Tugs

THE COOK & BROWN LIME CO., Oshkosh, Wis., is laying plans to build a number of wooden tugs at its shipyards. This company, which recently bid on a Maritime Commission contract, has been building its own tugs for a number of years.

## Crushed Stone Plant Fire

NEW ENTERPRISE STONE & LIME CO., suffered a fire loss estimated at \$15,000 at its Ashcom, Penn., plant, involving its main plant and also the agricultural limestone section. About \$4000 worth of paper bags were destroyed, according to the newspaper report, and all electrical equipment was seriously damaged. About three weeks will be required to rebuild the plant.

## Building 113 Concrete Ships

ANNOUNCEMENT has been made by the U. S. Maritime Commission that 113 concrete vessels are under con-



struction at five shipyards. Several of the vessels have been launched and the balance will enter service by next fall. A saving of 30 percent in steel is being made. Sixty-five vessels will be oil tanker barges, 26 will be dry cargo barges, and 24 will be medium sized freighters propelled by steam engines.

## Bond Pennant

THE KOENIG COAL & SUPPLY CO., Detroit, Mich., was awarded a Treasury Department pennant on November 10th for 100 percent participation in the 10 percent payroll deduction plan for the purchase of war bonds by employees of the Oxford, Mich., plant. John F. Koenig, chairman of the board, received the pennant in a presentation ceremony when it was awarded by a U. S. Treasury Department representative.

## Postpone Convention of Crushed Stone Association

ANNOUNCEMENT has come from the National Crushed Stone Association that the Board of Directors recently voted to indefinitely postpone its twenty-sixth annual convention. These meetings were originally scheduled to have been held January 26, 27 and 28, 1943, at the Hollenden Hotel, Cleveland, Ohio. The announcement stated that this action was in response to the suggestion made by Joseph B. Eastman, Director of Defense Transportation, in his statement of December 15 when he urged that all meetings and conventions be abandoned unless they contributed to shortening the war.

## Open Vermont Grit Plant

STONE MOUNTAIN GRIT CO., Lithonia, Ga., recently opened its Stonemo plant No. 2 at the Wells-Lamson quarry in Websterville, Vt. The Stone Mountain Company, claimed to be the largest makers of poultry grit in the world, has for many years operated a big plant at Lithonia, Ga. Due to high freight rates and transportation difficulties, it was decided to open up a second plant in the New England area.

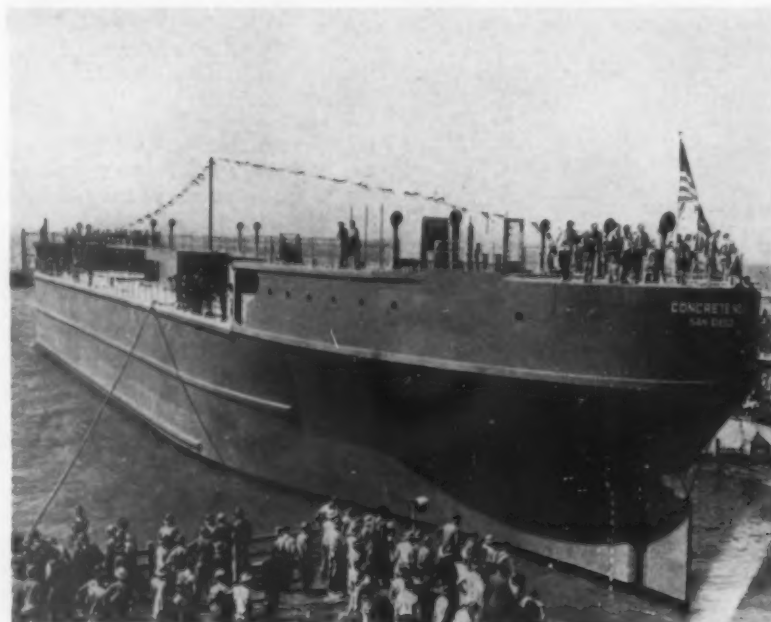
Charles L. Davidson, president of the company, who was present for the opening of the new plant together with J. Key Davidson, vice-president, and N. A. Davidson, secretary and treasurer of the company, estimated that the plant will turn out about a carload of grit an hour from the three Allis-Chalmers crushers.

## Expand Montana Phosphate Capacity

MONTANA PHOSPHATE PRODUCTS CO., near Garrison, Mont., is reported to be increasing its plant capacity to 1000 tons per day. Acquired by William Anderson, mining engineer of Oakesdale, Wash., many years ago, the property has been an almost continuous source of phosphate rock used at Trail, B.C., by the Consolidated Mining and Smelting Co. in manufacture of high grade fertilizer.

## Hard Rock Quarry Men Take Notice

Trap rock and granite contain considerable amounts of feldspar. Granite, particularly, disintegrates at high heat, which might add to its advantage as a covering agent as a magnesium fire extinguisher. Worth investigating.



Launching a 14,000-ton, 375-ft. concrete fuel barge at a California shipbuilding yard. Liquid capacity of the vessel is 8000 tons. Other yards on the Gulf, Atlantic, and Pacific oceans are turning out a number of concrete ships, largely for hauling fuel. All the larger boats are self-propelled



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Inspect and overhaul your tractors at frequent intervals. Keep tracks at proper tension, make wear take-up adjustments as necessary, replace worn parts before they can damage the surrounding mechanism, lubricate according to instructions. Call in the skilled help of your Allis-Chalmers dealer for inspections, overhauls, rebuilds, repairs. Proper care means longer life!



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FILL a Bemis Multiwall Paper Bag with cement. Throw it on a truck—stack other bags on it—give it "the works!" (Better get a big husky truck driver to do it for you because you'll get pretty tired before the bag breaks.)

This experiment will prove to you that Bemis Multiwall Paper Bags for cement can take rough handling in the shipping room... in transit... on the job.

This extra toughness saves lost time on the production line, too, because it reduces breakage to a minimum.

And, remember, toughness is only *one* quality of Bemis Multiwalls. They are showerproof. They are economical. And the clean-cut printing of your brand makes them effective salesmen.

We suggest you try this experiment before you place another bag order. We'd like to have you know about Bemis Multiwall Paper Bag quality. Sample bags for the trial will be sent upon request... free and without obligation.

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# DO YOU NEED INFORMATION?

CATALOGS LISTED ON THESE PAGES WILL HELP SOLVE YOUR PROBLEM

To save the time involved in writing individual letters for this new literature, you may obtain them by merely checking and mailing the coupon on the next page.

- 1 **ASPHALT PLANT.**—Iowa Mfg. Co. new Bulletin No. AP-11 describes and illustrates the Model E asphalt plant, portable wheel type, electric, gas, or Diesel driven. It is easy to set up and knock down, and is made in three sizes; 2000-lb., 3000-lb., and 4000-lb. Specifications for a 3000-lb. and 4000-lb. plant are given.
- 2 **BREAKERS.**—Roller-Smith Co. new Catalog 3130 describes and illustrates Class 50-TC oil circuit breakers which have continuous carrying capacities ranging from 600 to 3000 amperes at voltages up to 15000 volts. They can be mounted on switchboards, pipe frames, self-supporting steel panels or on the wall.
- 3 **BULLDOZER.**—The Baker Mfg. Co. has issued a 24-page book entitled "Unsung Heroes of War" depicting bulldozers, graders, scrapers, road discs, road rosters, maintainers and snow plows at work on many construction projects that must be completed before any real fighting can be done. This interesting book glamorizes the role of the bulldozer and grader in the war effort.
- 4 **CHAINS.**—American Manganese Steel Division of American Brake Shoe & Foundry Co. has issued a 16-page bulletin, No. 742-CN, describing and illustrating chains for elevators, conveyors, dredges, drag conveyors, etc.
- 5 **CLAMPS.**—Band-It Co., Inc., 4-page bulletin describes and illustrates clamps for clamping, coupling and repairing hose, pipes, tanks, etc. This clamping outfit consists of an applying tool, weighing 3½ lb., bands in 100-ft. rolls of steel to permit banding of everything from ¼-in. hose or pipe up to tanks of 30-ft. diameter, and buckles. A series of illustrations show just how to apply the clamps. It can also be used as a bench tool.
- 6 **CRANES.**—Diamond Iron Works, Inc., new Bulletin D-42-P describes and illustrates the Porta crane which is made in three sizes, the Midget Model of 2 tons capacity, the Junior Model of 5 tons capacity and the Senior Model of 10 tons capacity. These cranes can be quickly and simply attached to a truck or tractor and placed in immediate use, or they may be hauled anywhere to a job.
- 7 **CRANES.**—Whiting Corp., new 24-page book, No. 236, entitled "Whiting Products for Industry," describes and illustrates in a condensed form pertinent facts on its varied product lines, including cranes, railroad and aviation equipment, cupolas and foundry equipment, quick-work products, evaporators and filters, and other special equipment for heavy industries.
- 8 **CRUSHER.**—Diamond Iron Works, Inc., has issued Bulletin D-41-A which describes and illustrates a portable crusher with folding bucket elevator which can be lowered by means of hand-operated crank and transported in a folded position from place to place.
- 9 **CRUSHERS.**—Allis-Chalmers Mfg. Co. has released Bulletin B-6177-A containing a complete catalog-review of basic machinery for the processing industry. The application of crushing, grinding and milling type reduction, mechanical separation, washing, disintegrating and material handling, and pyro-processing equipment is completely described and illustrated.
- 10 **DREDGES.**—Morris Machine Works has issued a new 24-page bulletin, No. 177, describing and illustrating hydraulic dredges and dredging equipment. The catalog includes sectional views and exteriors of various types of dredges, many

illustrations of these dredges at work on various operations such as sand and gravel production, reservoir deepening and enlargement, waterways improvement, shore line development, etc., and complete descriptions of many types of centrifugal pumps and accessories.

- 11 **DRILLS.**—The Cleveland Rock Drill Co. has issued a 17-page booklet of cartoons illustrating some essential rules to follow for the satisfactory operation and maintenance of rock drills.
- 12 **DRILLS.**—Ingersoll-Rand Co. has issued a new 42-page booklet, Form 2724-C, entitled "Equipment for Quarries and Contractors," containing illustrations and data on rock drills, detachable bits, reconditioning equipment, hose lines, hoists, pumps, and air compressors. The reader will find many hints that may help save time and labor.
- 13 **CHAIN DRIVES.**—Link-Belt Co. has issued Folder No. 1951, entitled "First Aid for Faithful Chain Drives" which gives first-aid hints for chain drives. Seven servicing suggestions that will make any chain drive run better and last longer are also given.
- 14 **ELECTRIC POWER SYSTEMS.**—General Electric Co. has released Bulletin GED-1006 explaining the procedure for quickly installing electric power systems for new plants and plant extensions.
- 15 **HAULAGE EQUIPMENT.**—The Euclid Road Machinery Co. new 4-page bulletin, Form No. J-6, describes and illustrates 15-ton rear-dump hauling equipment for use in quarries. Operation and production figures for two or more units are also given.
- 16 **HOISTS.**—The Yale & Towne Mfg. Co., Philadelphia, Penn., has issued a 27-page bulletin, No. P-602, describing and illustrating hand chain hoists, electric hoists, trolleys, hand lift trucks, skid platforms and electric industrial trucks.

- 17 **LIFT TRUCKS.**—Towmotor Co. new manual, Form No. 37, entitled "The Inside Story" describes and illustrates the design, frame construction, lifting and stacking mechanism, power plant and travel mechanism, operating and control mechanism, and servicing and maintenance features of lift trucks. Each section is printed in a different color to facilitate reference.

- 18 **MACHINERY PARTS.**—The Thew Shovel Co., Lorain, Ohio, has released a new "Emergency Fix It Handbook," offering ideas and hints as to how emergency repairs may be accomplished to keep machines in operation.

- 19 **MAINTENANCE.**—Caterpillar Tractor Co. has published a new book, Form 7609, entitled "Keep 'Em Working," supplementing Operator's Instruction Books, to aid owners in getting the most out of their machines. It goes into detail on the care of certain critical parts and gives general information that is not conveniently available elsewhere.

- 20 **MILLS.**—Hardinge Co., Inc., has issued Bulletin No. 13-D describing and illustrating conical mills. This bulletin covers new developments in grinding and pulverizing and includes theory, practice, control, auxiliaries, wet and dry grinding operations, open and closed circuit systems, specifications and capacity tables.

- 21 **MOTOR FITNESS MANUAL.**—General Electric Co. has released a new Bulletin GED-1017, discussing ways of getting the most service out of old and new motors, "switching" motors from one job to another, and equipping old machines with new motors. A supplement explains how to save critical motor materials, including WPB recommendations, and information on use of load-time-temperature charts. The bulletin is arranged for quick reference.

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- 22 **NOZZLES.**—Chain Belt Co. has issued a new illustrated folder, Bulletin No. 409, describing its REX spray nozzles for washing, cleaning, cooling and descaling.
- 23 **PUMPS.**—Allis-Chalmers Mfg. Co. new bulletin, B-6059-H, describes and illustrates pump types for every purpose, single and double suction, single and multi-stage, mixed and axial flow, and special pumps to solve special problems. Construction features, sizes and capacities are listed in a manner which simplifies the choice of proper pumping equipment. Charts and diagrams are also included.
- 24 **PUMPS.**—Worthington Pump & Machinery Corp. has published a 2-page bulletin, No. W-310-B11, giving specifications for the Type CY single stage, open impeller, belt or motor drive pump. Rating tables for Type 1-CY-1 belt drive and motor drive pumps are also included.
- 25 **RECONDITIONED AND NEW EQUIPMENT.**—Denver Equipment Co. has issued Catalog No. G-4200 listing reconditioned and new equipment which they have in stock. The catalog contains illustrations and descriptions of the various pieces of machinery.
- 26 **RUBBER.**—B. F. Goodrich Co. has published a new booklet "Rubber Conservation for Users of Industrial Rubber Belting" containing an illustrated step-by-step procedure for making repairs on conveyor belts by the use of portable electric vulcanizers. Also Catalog Section 4500 on the care and maintenance of steam hose, giving detailed instructions on proper methods to attach couplings. Data on inside and outside diameters, weight and number of plies also are listed.
- 27 **RUBBER BELTS.**—Robins Conveying Belt Co. has published a bulletin giving the mechanical and chemical properties, application and uses of Malacca plastic rubber (Job Sheets Nos. 17, 121, 15 and 35), also maintenance of conveyor belts with this rubber (Job Sheet No. 1). A card also has been issued containing their engineers' recommendations for proper care of rubber conveyor belting.
- 28 **SCALES.**—The Kron Scale Co. new catalog No. 8-426 illustrates and describes many designs of dial scales, such as dynamometer, hopper, platform, bench, and crane scales. The dial head swivels to any angle to suit the operator's convenience.
- 29 **SCALES.**—Merrick Scale Mfg. Co. Bulletin No. 551, which supersedes Bulletin No. 388, illustrates and describes various types of feedweights for feeding and proportioning raw materials by weight. Single and two, three and four combined units are shown, together with dimensions, specifications and blueprint sketches.
- 30 **SCREENS.**—Robins Conveying Belt Co. has published Bulletin No. 123 describing and illustrating vibrating screens for separating solids from liquids. Typical examples of actual applications of these screens, such as removing coarse foots from hot cotton seed oil, removing foreign material from starch milk, scalping cement slurry in closed circuit, etc., are shown.
- 31 **SCREENS.**—Nordberg Mfg. Co. has released Bulletin 111 describing and illustrating hydro-sizer screens for screening mine pulps, sand, chemicals, paper, oil well mud and other fine materials. It is built in two sizes, 42- x 72-in. and 72- x 72-in. and is easily installed, very little floor space or head room being required.
- 32 **SEPARATORS.**—Stearns Magnetic Mfg. Co. has issued an informative treatise, Bulletin No. 800, on the subject of magnetic separators and magnetic separation in the form of an eight-page brochure entitled, "The House of Stearns Magnetic Magic." It is written for the factory official, metallurgist and engineer to provide information not generally included in the books on their reference shelves.
- 33 **SNOW PLOWS.**—The Baker Mfg. Co. has published a 12-page booklet entitled "Snow—Friend of the Enemy" describing and illustrating the role the snow plow is playing in the war effort. Included in the book are illustrations of the V-type truck and tractor plows, reversible tripping blade truck plow, one-way landside plow, speed patrol V-plow and wheeled tractor snow plow.
- 34 **SPEED INDICATOR.**—Reeves Pulley Co. has released a four-page folder, Bulletin No. G-427, describing a new type electric remote speed indicator for use with variable speed control equipment.
- 35 **STEEL.**—The Babcock & Wilcox Tube Co. has released a complete combined list of standard steels of the American Iron and Steel Institute and the Society of Automotive Engineers, Inc., as a new technical data card. The number of this list is TDC-119.
- 36 **STEEL SHAPES.**—Commercial Shearing & Stamping Co. new booklet, Section No. 4, describes and illustrates new standard steel shapes now available without die costs.
- 37 **STEEL SHAPES.**—Joseph T. Ryerson & Son, Inc., has published a new 1942-43 stock list of more than 11,000 different kinds and sizes of steel shapes, with up-to-the-minute information on alternate sizes and substitute qualities. The stock list also contains a brief history of the growth of the organization from 1842 to 1942.
- 38 **STEEL SHAPES.**—Cross Engineering Co. has issued Reference Book No. 460 describing and illustrating perforated steel sheets and plates used for screens, strainers, dryers, separators, supports, safeguards, ventilators, spacers, drains, reinforcements, etc.
- 39 **TESTING EQUIPMENT.**—Humboldt Mfg. Co. Catalog 12 describes and illustrates testing equipment for cement, concrete, aggregates and sub-soils, including testing sieves and shakers, balances and weights, soil testing equipment, and drying ovens. The illustrations and descriptions are clear and concise.
- 40 **TOOL STEEL.**—Jessop Steel Co. Bulletin No. 941 describes an intermediate grade of carbon tool steel which can be supplied in bar, plate, sheet, strip, or forging sections in standard sizes and tempers. Typical applications with recommended tempers for each application are also listed in the booklet.
- 41 **VOLTMETER.**—General Electric Co. Bulletin GEA-3619 describes and illustrates a new electronic crest voltmeter designed to measure ignition voltages of internal combustion engines, generators, cables, and other repeated-impulse voltages up to 30,000 volts. It weighs only 23 lb. and can be used in areas where no electric power is available. It can be moved readily to any location for testing purposes. The voltmeter is equipped with an aircraft-instrument movement to provide resistance to vibration.
- 42 **WELDING.**—Westinghouse Electric & Mfg. Co. has issued a new 12-page booklet B-3136, which compares advantages of a-c and d-c welding. A complete line of Flexarc A-C welders, with current ratings from 100 to 500 amperes, is described and illustrated. Featured are the 500-ampere industrial welder for high-speed, continuous welding on all types of heavy construction; and the 300-ampere portable welder for heavy-duty work.

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ROCK PRODUCTS, 309 W. Jackson Blvd., Chicago, Ill.

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28	29	30	31	32	33	34	35	36
37	38	39	40	41	42			

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THE CLEVELAND ROCK DRILL CO.  
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keep rock drills  
*on the job*

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a copy

**T**HIS booklet of Cleveland Cartoons presents, in an amusing style, useful hints on proper rock drill maintenance. It tells you and your men what you can do to get more work out of your tools with minimum expense for repairs and compressed air. Your men will enjoy the practical, down-to-earth style of these cartoons. It covers many important phases of operation such as lubrication, dull drill steels, worn chucks, cleaning, etc.

We have already received requests for thousands of copies of Cleveland Cartoons. In the interests of efficient wartime operation, write now for your free copy.

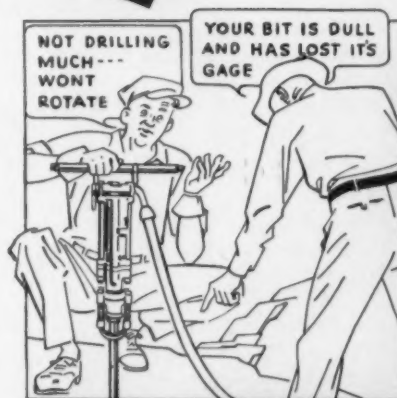
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### A TYPICAL CLEVELAND CARTOON

**DON'T USE DULL DRILL STEELS**—When the bit, from wear or improper sharpening, loses its gage, it will no longer be free in the hole and the blows of the hammer wedge it tightly, greatly slowing up, if not entirely stopping the progress of the drill. Never use dull steel. You get no drilling to speak of, and you put your machine in the repair shop besides.

# The CLEVELAND ROCK DRILL CO.

Subsidiary of The Cleveland Pneumatic Tool Company

CABLE ADDRESS: "ROCKDRILL"

CLEVELAND, OHIO

## LEADERS IN DRILLING EQUIPMENT

## Industrial Sand

(Continued from page 104)

not making a specific recommendation at the present time; but on the other hand is asking the Directors to consider whether or not it is believed worth while under present conditions to lay out a program for plant and production research, such program in turn to be presented to the member companies, possibly at the time of the next annual meeting, for specific action and further instruction to the Committee.

"Research Committee, National Industrial Sand Association, J. M. Strauss (Ex-Officio), Stanton Walker (Consultant), Russell G. Hay, T. C. Matthews, Alfred J. Miller, William

Muhltnr, Hamilton Allport (Chairman)."

### Registration

Directors and other producers present were:

A. N. Farmer, Sand Products Corp.  
Geo. A. Thornton, Ottawa Silica Co.  
E. M. Durstine, Keener Sand & Clay Co.  
Miss C. F. Bryant, Geo. W. Bryant Core Sands.  
L. M. Hansen, Industrial Silica Corp.  
T. W. Dwight, Albany Sand & Supply Co.  
C. O. Schneider, Ottawa Silica Co.  
Eber W. Finkbner, So. Jersey Sand Co.  
Jack Cleary, Oneida Lake Sand Mines.  
Sterling Farmer, Sand Products Corp.  
Russell G. Hay, Ayers Mineral Co.  
T. C. Matthews, Pennsylvania Glass Sand Co.  
J. M. Strauss, Deckers Creek Sand Co. (President).  
A. H. Tanzer, New Jersey Pulverizing Co.  
H. P. Spier, New Jersey Pulverizing Co.

A. B. Schlesinger, New Jersey Pulverizing Co.  
Ralph Stevens, Cape May Sand Co.  
Louis Dill, Geo. F. Pettinos, Inc.  
A. Y. Gregory, Whitehead Bros. Co.  
A. Warsau, Wedron Silica Co.  
Hamilton Allport, Standard Silica Corp.  
C. Mathiesen, Whitehead Bros. Co.  
C. M. Hardy, Houghland Hardy.  
E. H. Daugherty, Taggart & Co.  
John Putnam, National Silica Co.  
A. J. Miller, Whitehead Bros. Co.  
C. R. Wolf, New Jersey Silica Co.  
Howard J. Williams, New Jersey Silica Co.

## Limestone Institute Meets

MIDWEST AGRICULTURAL LIMESTONE INSTITUTE met in Chicago, December 18, to discuss problems and prospects for 1943. The consensus of opinion was that unless something is done soon to define production and distribution of agricultural limestone an essential industry, agricultural production in the nation's "corn belt" would seriously suffer. Farmers are cut off from normal sources of nitrogenous fertilizers by the demands of war industries. Nitrogen producing crops, such as clover and alfalfa, are needed to supply the deficiency, yet these are seldom successful without liberal use of lime or limestone.

Most of the producers in Illinois, Indiana and Iowa are large operators whose primary business is crushed stone. With them agricultural limestone has been largely a byproduct, and consequently has been sold through the years at very low prices. It is not feasible to operate these large plants to make agricultural limestone exclusively, at the present price ceilings. Nor are the plants designed to make agricultural limestone exclusively without addition of much new equipment. There does not appear, at this time, to be much business ahead in commercial sizes of crushed stone.

The problem was discussed from all angles. During a part of the discussion the members of the Institute had the benefit of the advice and knowledge of the secretary of the Illinois Agricultural Association, and the head of the state agricultural experiment stations. But until the A.A.A. or some other federal bureau acts on the problem, the outlook is very uncertain.

The following officers were elected (or reelected): E. J. Krause, St. Louis, Mo., president; Dan Sanborn, Kankakee, Ill., vice-president; H. C. Clark, Chicago, Ill., treasurer; J. R. Bent, Chicago, Ill., secretary; Colby Armstrong, Chicago; Sidney Marks, Chicago; R. S. Quelle, Davenport, Ia.; W. E. Hewett, East St. Louis, Mo.; W. H. Traver, Elmhurst, Ill.; also, the president and vice-president, ex-officio, are members of the board.

WHERE 10 DAYS HAD BEEN TOPS...

# these Spouts lasted 30!

THAT is because these pulverizing mill discharge spouts have a hard-facing of Coast Metals. This protecting overlay is exceptionally resistant to the severe abrasive action of the hot clinker mixture that formerly wore out ordinary spouts in less than 10 days' service!

Easily applied by the electric welding arc or the oxy-acetylene torch to any ferrous metal including manganese steel, cast iron and chilled iron, Coast Metals hard-facing is today's wartime answer to making parts employed in tough service last longer. By keeping equipment on the job without unnecessary shut-downs for repair or replacement, it steps up production and improves plant operating efficiency.

Tell us *your* particular wear-resistance problems. Our engineers can help you.

COAST METALS, INC.

Plant and General Offices: Canton, Ohio  
Executive Offices: New York, N.Y.



# COAST METALS

hard-facing  
weld rods

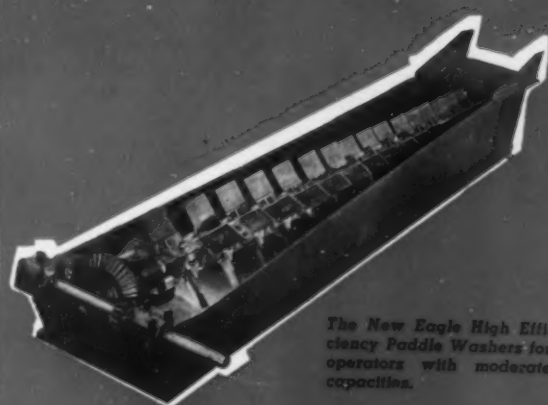
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★ ★ ★ **KEEP YOUR WASHING EQUIPMENT**  
**WORKING AT *Top Speed***

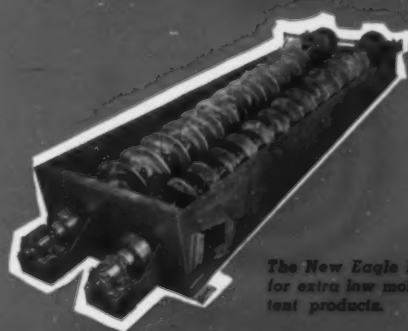


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 Repair Parts**



*The New Eagle High Efficiency Paddle Washers for operators with moderate capacities.*



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**EAGLE**  
**IRON WORKS**  
 ★ DES MOINES, IOWA ★



Our engineers designed Eagle Washers to withstand terrific wear.

That is why:

Timken Roller Thrust Bearings are used in the housing at upper end of tub, which takes all the end thrust of a screw shaft.

Flights are made from a special iron and the metal is deeply chilled to insure long wear.

Bronze sleeves are pressed on lower end of shaft to eliminate rust accumulation and prolong shaft life.

Drive Gears and pinions are steel, cut on precision machines, to insure easy running and full power transmission.

Our engineers are ready and waiting to assist you at all times.

Our service department is anxious to furnish you with genuine Eagle Repair Parts and we will give you as prompt delivery as possible.

Eagle Products include: Spiral Screw Washers, Paddle Type Log Washers, Sand Tanks, Sand Drags, Sand Dewaterers, Shale Removers, Sand and Gravel Crushers, Swintek Screen Nozzle Ladders.



# FOR VICTORY TODAY AND SOUND BUSINESS TOMORROW



## ***Get This Flag Flying Now!***

This War Savings Flag which flies today over companies, large and small, all across the land means *business*. It means, first, that 10% of the company's gross pay roll is being invested in War Bonds by the workers voluntarily.

It also means that the employees of all these companies are doing their part for Victory . . . by helping to buy the guns, tanks, and planes that America and her allies *must* have to win.

It means that billions of dollars are being diverted from "bidding" for the constantly shrinking stock of goods available, thus putting a brake on inflation. And it means that billions of dollars will be held in readiness for post-war readjustment.

Think what 10% of the national income, saved in War Bonds now, month after month, can buy when the war ends!

For Victory today . . . and prosperity *tomorrow*, keep the War Bond Pay-roll Savings Plan rolling in *your* firm. Get that flag flying now! Your State War Savings Staff Administrator will gladly explain how you may do so.

If your firm has not already installed the Pay-roll Savings Plan, *now is the time to do so*. For full details, plus samples of result-getting literature and promotional helps, write or wire: War Savings Staff, Section F, Treasury Department, 709 Twelfth Street NW., Washington, D. C.



Save With

## **War Savings Bonds**

This Space Is a Contribution to America's All-Out War Program by

**ROCK PRODUCTS**

## Making Magnesium

(Continued from page 61)

decarbonated dolomite falls through a 2 by 4 ft. chute into two coolers. These are constructed on much the same plan as the kilns. They are inclined cylinders, 60 ft. long, 8 ft. in diameter. An induced draft constantly blows through them. The gravity flow of the dolomite through these coolers requires 15 minutes. At the low cooler end, the dolomite drops into a bucket conveyor which transports it to the finish grinding mills, 20 ft. distant.

The ferrosilicon is introduced to the compeb mill by the same bucket conveyor, as is indicated in the flow sheet. The dolomitic lime is mixed roughly in proportion with 75 percent ferrosilicon in a ratio of slightly less than 6-to-1. The true, formulated weight proportion is, naturally, a military secret. However the calcined dolomite and precrushed ferrosilicon are mixed and ground in the compeb mills. These mills are continuous and perform the dual purpose of grinding to a very fine state and thoroughly mixing the two materials. They further compact the mixture so that the natural forces which tend to prevent actual contact of lime and ferrosilicon are overcome.

This dry dolomitic lime-ferrosilicon mix is then placed in powder bins until it is needed for briquetting. From the mill and by elevator to the powder bins and then, by a 75 ft. long screw conveyor, the mix is carried to the scales where it is weighed and then, still in bulk form, it is loaded into trucks and carried to the briquetting unit, located elsewhere in the company's 1200 acre Rouge plant.

You would find it astonishingly hopeful if I were permitted to declare the quantity of magnesium which Ford is producing. However, the enormous quantities of briquettes required in the smelting operation have necessitated presses capable of rapid production. To accomplish this, Ford converted another process, gained from Ford experience in briquetting glass batches required in the manufacture of automobile safety glass. Though this process showed Ford engineers the way, the nature of the calcined dolomite-ferrosilicon mix made study and design of auxiliary equipment essential. The briquetting presses are, therefore, another original Ford engineering accomplishment.

The presses now in use are large rolls with pockets or recessed molds in them. The powdered mixture is formed into briquettes of handy shape

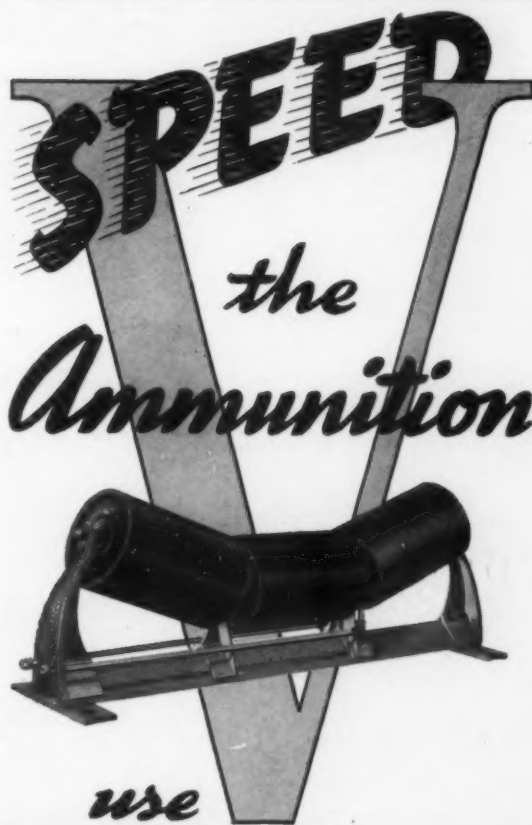
at the bite of the rolls. Some experimental work with waterglass and water binders was initially done. No binder is now employed. The pressure used is from 10 to 12 tons per square inch. This is achieved by 1½-in. steel rods coiled into springs. Because of the rapid revolution of the press rolls, hydraulic pressure could not be satisfactorily employed.

After briquetting, the mix is then trucked to the Ford magnesium smelter plant where the pure magnesium is extracted. Ford has been casting magnesium parts for better than a year. Thus all phases of magnesium-

mining, calcining, smelter and fabrication, from the basic, natural rock in its quarry, to the aircraft engine part that flies aloft over our many fighting fronts, has been established by the Ford Motor Company—another Ford enabling act for victory.

### BIBLIOGRAPHY

- Ladoo: "Non Metallic Minerals," 553-L12.  
Smith: "Strategy of Minerals," 553-551.  
Emmons: "Principles Econ. Geology," 553-E54A.  
Bull. 113: "Minerals of California," 553-1-P11.



## CONTINENTAL Belt Conveyor Idlers

**S**PEED is the order of the day. And there's no better way to speed up your production than by installing Continental Belt Conveyors. Many vital war plants have chosen Continental Belt Conveyors to speed their bulk materials. They are designed to do the job efficiently

at a low cost per ton. They have what it takes!

You, too, can *Speed the Ammunition* by using Continental Belt Conveyors. Write today for information and Bulletin ID-103, which shows the superior features of Continental Belt Conveyor Idlers.

INDUSTRIAL DIVISION  
★ ★ **Continental GIN COMPANY** ★ ★  
BIRMINGHAM, ALABAMA  
ATLANTA . . . DALLAS . . . MEMPHIS

# FINANCIAL NOTES

## RECENT DIVIDENDS

Arundel Corp. ....	.25 Q	Dec. 28
Arundel Corp. ....	.50 ext.	Dec. 28
Calaveras Cement Co. 7% pfd. (arrear)	.75	Dec. 13
Consumers Co. pfd. ....	1.00	Dec. 22
Diamond Portland Cement Co. Com. (pl) ..	.25	Dec. 19
Eastern Magnesia Talc Co. Com. (p100) ..	2.50 ext.	Dec. 21
Ideal Cement Co. ....	.35 Q	Dec. 22
Ideal Cement Co. Com. (p10) ..	.35 ext.	Dec. 22
Industrial Silica Corp. 6½% pfd. (p100) (arrear)	1.62½	Dec. 28

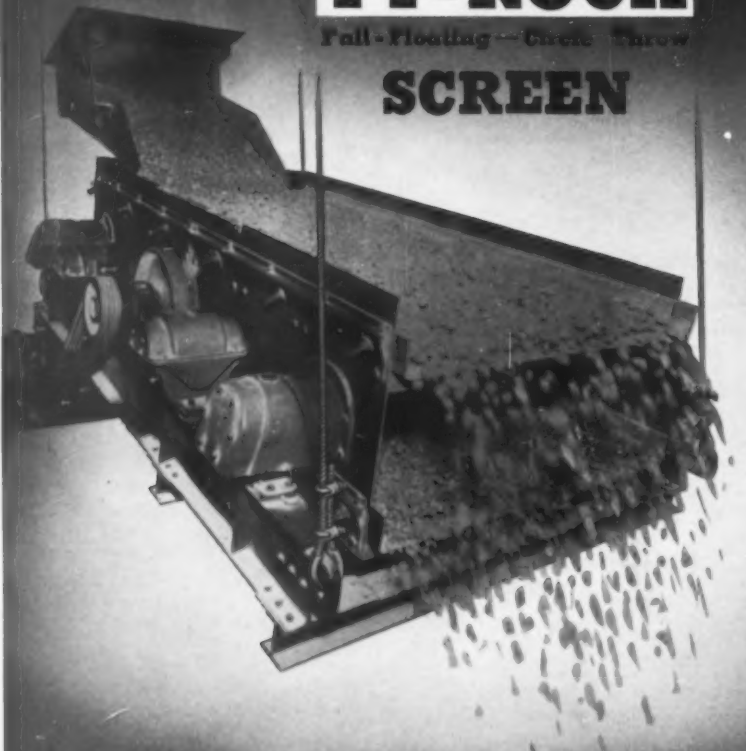
Longhorn Portland Cem. Co. Com. (np) ..	1.00	Dec. 22
Medusa Portland Cement Co. Com. (np) ..	.50	Dec. 23
Michigan Silica Co. ....	.05 Q	Dec. 23
Minnesota Mining & Mfg. Co. ....	.30	Dec. 10
Missouri Portland Cem. Co. Com. (p25) ..	1.00	Dec. 15
Monolith Portland Cement Co. 8% pfd. (p10) (arrear)	.25	Dec. 15
Monolith Portland Midwest Co. 8% pfd. (p10) (arrear)	.30	Dec. 15

Pacific Coast Aggregates, Inc. ....	.28	Dec. 28
Pacific Portland Cement Co. 6½% pfd. (p100) (arrear)	2.50	Dec. 15
Pennsylvania Glass Sand Co. Com. ....	.25 Q	Jan. 1, 1943
Pennsylvania Glass Sand Co. pfd. ....	1.25	Jan. 1, 1943
Riverside Cement Co. 1st pfd. ....	1.50	Feb. 1, 1943
Santa Cruz Portland Cem. Co. ....	.25	Jan. 4, 1943
Southern Phosphate Corp. ....	.10	Dec. 15
Superior Portland Cement Co. \$3.30 Cl. A. ..	.82½	Dec. 24
Wolverine Portland Cement Co. ....	.25	Dec. 28
Yosemite Portland Cement Corp. pfd. ....	.10	Jan. 2, 1943

## TY-ROCK

Fall-Floating—Circle Throw

## SCREEN



**HIGH OUTPUT!**

**COARSE MATERIALS!**

**LOW SCREENING ANGLE!**

**NO ESCAPING VIBRATION!**

**THE W. S. TYLER COMPANY**

**CLEVELAND, OHIO**

ARUNDEL CORPORATION, Baltimore, Md., reports for the 11 months ended November 30, 1942, a profit of \$2,311,217 after charges, but before federal and state income taxes, as compared with a profit of \$1,558,373 for a like period in 1941. Contract work on hand amounts to \$13,087,086, and outlook is said to be satisfactory.

UNITED STATES GYPSUM Co., Chicago, had a net income of \$3,878,148 for the nine months ended September 30 as against \$5,045,658 for a similar period in 1941.

CERTAIN-TEED PRODUCTS Co., Chicago, reported a net profit of \$800,797 for the nine months ended September 30, 1942, after \$1,173,202 for federal and Canadian taxes, as compared with \$1,145,665 for the corresponding period in 1941.

SCHUMACHER WALL BOARD CORPORATION, Los Angeles, Calif., has announced a net profit of \$40,496, after all charges, for the three months ended October 31, 1942, compared with a net of \$32,665 for the quarter ended July 31, 1942, and \$78,732 for the three months ended October 31, 1941.

PENNSYLVANIA GLASS SAND CORPORATION, Lewistown, Penn., had consolidated net earnings of \$441,854 for the nine months to September 30, 1942, after all charges. This compares with a net of \$519,808 for a like period in 1941. Provision for taxes was \$846,645 for the first nine months of 1942 as compared with \$539,865 for the first nine months ended September 30, 1941.

WARNER Co., Philadelphia, Penn.,

has announced that the plan of extension of its first mortgage 6% sinking fund bonds is a success with the deposit of more than 90% of the bonds. In addition to having the maturity date of the bonds extended from April 1, 1944 to April 1, 1951 at the present 6% annual interest rate, holders will receive in cash \$180 per bond, representing the full unpaid interest that accrued from 1933 to 1935 inclusive. In addition to the extension of the maturity date, the plan as originally presented in May provided for the cash payment of \$90 per bond on account of unpaid deferred interest and pledged the company to set aside 20% of each year's net earnings for payment of the remainder of such unpaid deferred interest. However, on September 30 the company announced that in view of further improvement in its financial position, it would pay all of the deferred interest provided 90% of the bonds were deposited under its extension plan. Charles Warner, president of the company, said that he considered this one of the most constructive steps that the company has taken in the last ten years.

STANDARD SILICA CORP., Chicago, Ill., reports for the 6 months ending June 30:

	1942	1941
Net sales .....	\$325,106	\$301,299
Costs, depreciation, etc. ....	222,335	216,001
Operating profit .....	102,771	85,298
Other income, net....	5,058	3,044
Total income .....	107,828	88,342
Income and profits tax .....	78,000	43,000
Net profit .....	29,828	45,342
Dividends .....	77,399	58,050
Deficit for period....	47,571	12,708
Earned per share....	\$0.23	\$0.35
Number of shares....	129,000	129,000

Based on tax bill recently passed by the House.

PEERLESS CEMENT CORPORATION, Detroit, Mich., had a net profit of \$256,803 for the nine months ended September 30, 1942, as against \$324,608 for a similar period in 1941.

CONSOLIDATED CEMENT CORP., Chicago, Ill., reported the following earnings statement for the nine months ended September 30:

Net sales .....	\$2,433,813	\$1,743,604
Cost of sales .....	1,607,970	1,233,993
Sell., etc., exp. ....	308,177	311,329
Operating profit .....	517,666	198,281
Income bond int....	49,029	57,798
Income note int....	5,202	5,656
Bond disc. & exp....	6,391	6,258
Misc. deductions .....		17
Net profit .....	457,044	128,552

<sup>1</sup>Includes expense applicable to non-operating periods (less miscellaneous income).

<sup>2</sup>Before income taxes.

FLORIDA PORTLAND CEMENT CO., Tampa, Fla., and Chicago, Ill., had a

net profit of \$651,734 for the nine months ended September 30, 1942. This compared with a net profit of \$892,582 for a similar period ended September 30, 1941. Net sales for the first nine months in 1942 were \$2,798,906 as compared with \$3,015,114 for a like period in 1941.

BLUE DIAMOND CORP., Los Angeles, Calif., reports for the six months ended June 30, 1942, net profit of \$92,536, after all charges including depreciation and provision for federal income and excess profits taxes, based on the 1942 revenue bill, equal to 12.7 cents a share on 729,313 common

shares outstanding. This compares with net profit of \$129,087, or 17.7 cents a share reported for the like period last year.

Net sales for the period were reported at \$3,041,047, compared with \$2,379,461 for the same period last year, an increase of 27.8 percent.

Higher wages and salaries, increased expenses, higher costs of supplies and low ceilings placed on gypsum products are cited by W. J. Van Valkenburgh, president, as reasons why the increased net sales are not fully reflected in net profit. Activities of the company now are 98 percent on war work.



TO keep the enemy on the run, it is imperative that we keep our fighting forces supplied with all necessary equipment. Enormous quantities of steel are required for guns, planes, tanks, ships and shells. The more service you can get out of your wire ropes, the more steel you save for these other vital purposes . . . so, the longer you can keep your ropes running, the faster will be the flight of the foe.

Whether or not a wire rope gives the full service of which it is actually capable, depends largely upon the conditions under which it is required to work—unfavorable or improper conditions mean shorter life; to save steel, give your ropes the same kind of a chance you are now giving your tires.

Another important factor in getting maximum service from wire rope is the use of the correct grade, construction and type. On all problems of this kind, feel free to consult our experienced Engineering Department.

For the benefit of all wire-rope users we have published a 44-page illustrated booklet entitled, "Practical Information on the Use and Care of Wire Rope." It contains information that will help all wire rope users get more "Work hours" from every pound of their wire rope steel. We shall be glad to supply a complimentary copy upon request.

**A. LESCHEN & SONS ROPE CO.**  
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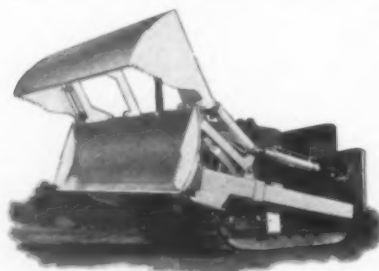
# NEW EQUIPMENT

## Bulldozer-Scraper Combination on Tractor

HI-WAY SERVICE CORPORATION, Milwaukee, Wis., has designed an unusual machine which can handle many shovel jobs and also carry on bulldozer and scraper operations. This tractor-mounted equipment is known as the Drott bull clam shovel.

It is hydraulically controlled from the driver's seat, and it is designed to dig, carry or float material, and dump it. Depth of the cut is regulated by raising and lowering the clam. By moving forward, the dirt "boils" into the shovel leaving a level footing for the tractor at all times. Either end of the bull clam may be tilted independently to 24-in. angle from the driver's seat while the tractor is in motion.

In addition to regular cut and fill work, it is said that the bull clam may be used to remove trees and stumps, haul big boulders, snow or



Machine equipped for use as a shovel, bulldozer, and scraper

ice, lay pipe, tile or cable lines. The bull clam comes in various sizes to fit all makes and models of tractors with heaped capacity ranges of from one to four cubic yards. Lifting capacities range from 3000 to 12,000 lb. Objects or material may be carried as high as three feet above ground. The drop below ground level is one foot.

## Double-Bodied Semi-trailers

EASTON CAR & CONSTRUCTION CO., Easton, Penn., has brought out a unique design of semi-trailer in which two bodies are mounted on a single chassis and are independently dumped. This unit is known as the Easton TR-15D.

The double-body design was developed to conserve fuel, rubber and man-power by hauling the largest



Semi-trailer equipped with a double body, each section of which is dumped independently

possible loads with a single tractor. The first unit was to meet a particular condition at a large Southern plant where it was desired to haul 17 tons per load but the crusher hopper was too small to take the entire load in one discharge. The container was therefore divided into two sections which are dumped independently. Half-loads are handled easily in the small hopper opening without choking or damaging the crusher.

## Choosing Refractories

MEXICO REFRACTORIES CO., Mexico, Mo., has issued an 8-pp. bulletin on "Choosing the Correct 'Better Refractories' Product to Meet Specific Conditions." It will be found helpful to all users of refractories by giving them at a glance characteristics or properties of refractories and the conditions and composition which affect these properties.

The chart accompanying the bulletin (and the discussion) covers (1) slagging; (2) abrasion; (3) melting; (4) spalling; (5) rigidity; (6) disintegration; (7) confinement of heat. Each of these "utilities" is discussed in detail, as for example, under slagging is the effect of composition, viscosity, reduction and oxidation; under melting is considered, mechanical spalling, structural spalling, thermal spalling.

## Dry Fine Materials with Minimum Dust Loss

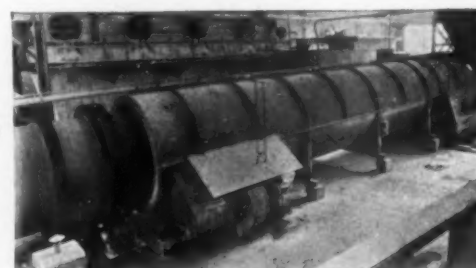
L. R. CHRISTIE CO., New York, N. Y., has introduced a new rotary dryer, the design of which is said to eliminate the need for independent dust collectors which usually have been found necessary when drying fine mesh materials. It is an indirect heat dryer in which the furnace gases do not come in direct contact with material to be dried.

This design consists of a metal drum, divided into compartments, to give increased heating surface, which is enclosed in an insulated steel casing that utilizes the entire surface of the outer shell for additional heating surface. It may also be used as a rotary retort for distilled gases or drying may be done in an inert atmosphere.

It is claimed that all openings are closed against infiltration of air, but at the same time, by patented construction, the operation of charging and discharging are continuous.

Due to the total absence of draft in, over, and around the "charge," the dryer handles materials of minus 300 mesh without appreciable dust loss. Any type of fuel or heating medium can be used, and it is said that efficiencies are better than 60 percent. Recirculation of furnace gases give easy control of temperatures and improved efficiency.

Drying fine mesh materials with minimum dust loss





## STANDARDIZED: U. S. TRANSIT-MIX CONCRETE CO. ORDERS ITS FIFTH BUTLER PLANT

Repeat orders are a sure indication of *performance*. In its farflung operations on vital war work, the U. S. Transit-Mix Concrete Co. had to have equipment that would do the job, and do it quickly. No surprise is it that they came to Butler for every plant; no surprise was it that in every case the plant performed with outstanding success. Continuous production up to 250 cubic yards per hour from a ready mixed plant is a record that reflects credit not only on the producer, but on the plant as well.



Whether you plan on a production of 250 cubic yards per hour or 250 cubic yards per week, call upon Butler to help you plan your plant. The best will cost you less in the long run. And write today for your copy of the new booklet on ready mixed plants; there is no obligation.

**BUTLER**  
**BIN COMPANY**  
**WAUKESHA ♦ WISCONSIN**

# TRAFFIC NEWS

## Recent Rate Changes

Following are the latest proposed changes in freight rates up to and including the week of Dec. 26

### Trunk Line

41237 (shippers). Limestone, crude, fluxing, foundry and furnace, C. L. See Note 3, from Coburn, Pa., to Steelton, Pa., and Johnstown, Pa., 92c. and to Bethlehem, Pa., and Sparrows Point, Md., \$1.53 per gross ton, in lieu of current 6th class rates. Reason: See Note 5.

41262 (shippers). Slag, coke oven in bulk, in open top cars, C. L. (See Note 3), from Mt. Pleasant, Penn., to Confluence, Penn., 77c and to Somerset, Penn., 99c per net ton, in lieu of current class rates. Reason: See Note 5.

41273 (shippers). Limestone, not burnt, ground or pulverized, C. L., min wt.

60,000 lb., from Muncy, Penn., to New York, N. Y., \$2.92, Camden, N. J., \$2.04, and Richmond, Ind., \$3.47 per net ton, in lieu of current 6th class rates of 24c, 22c and 34c per 100 lb., respectively. Reason: See Note 5.

41284 (shippers). Limestone, crude, fluxing, foundry and furnace, C. L., min. wt. 90 per cent of marked capacity of car, etc., from Coburn, Penn., to Alliquippa, Penn., \$1.39, Canton, Massillon and Cleveland, O., \$1.79 per gross ton, in lieu of current 6th class rates of 23c, 26c, 27c and 28c per 100 lb., respectively. Reason: Comparable with rates from and to other points.

### Southern

29188 (carrier). Mica (Muscovite), crude, scrap or waste, C. L., 90,000 lb. Establish 950c net ton, Belle Fourche and Jolly Dump, S. D., to Sprucepine, N. C.

29206 (shipper; suggested by carrier). Phosphate rock, crude, ground or pulverized, L. C. L. Establish 645c net ton, Mt. Pleasant, Tenn., district to St. Louis, Mo.

29268 (shipper). Lime, common, hydrated lime, quick or slack, C. L., 40,000 lb. Establish 13c cwt., Glencoe, Missouri and St. Genevieve, Mo., to Millington, Tenn.

29727. Ground limestone, Cartersville, Ga., Sparta, Tenn., and Tate, Ga., to points in Louisiana, Oklahoma, Texas and Missouri. To establish on ground limestone, in carloads, in cents per net ton, from Cartersville, Tate, Ga., and Sparta, Tenn., the following joint through commodity rates:

In cents per ton 2,000 pounds.  
From

To	Cartersville, Ga.	Sparta, Tenn.	Tate, Ga.
Shreveport, La. ....	335	357	357
Crowley, Pa. ....	346	379	379
Lake Charles, La. ....	368	390	390
Eunice, La. ....	346	379	368
Oklahoma City, Okla. ....	434	412	456
Tulsa, Okla. ....	412	390	434
Beaumont, Tex. ....	379	412	412
Dallas, Tex. ....	401	412	434
Fort Worth, Tex. ....	423	423	445
Galveston, Tex. ....	434	456	456
Houston, Tex. ....	412	445	445
San Antonio, Tex. ....	484	484	495
Kansas City, Mo. ....	423	379	445

The proposed rates are subject to the Ex Parte 148 increase.

29743. Lime—Stopover privileges to partly unload. To amend Item 6760-A of SWL Tariff 174-N to include lime when shipped in mixed carloads with plaster and related articles, etc., in order that stopover privilege will be allowed on lime, when in mixed carloads with plaster and related articles.

Note 1—Minimum weight marked capacity of car.

Note 2—Minimum weight 90% of marked capacity of car.

Note 3—Minimum weight 90% of marked capacity of car, except that when car is loaded to visible capacity the actual weight will apply.

Note 4—Reason: No present or prospective movement.

Note 5—Reason: Comparable with rates from other origins in immediate vicinity.

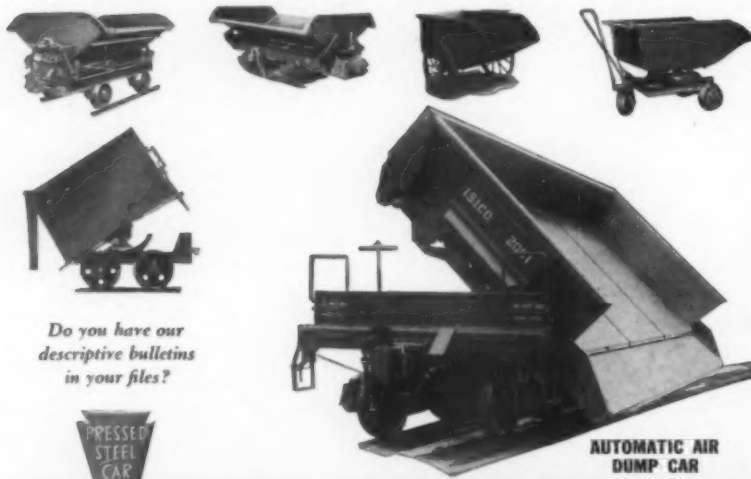
Note 6—Rates will not apply on shipments in cars with tarpaulin or other protective covering. In such instances the rates applicable on shipments in box cars are to be assessed.

Note 7—The oil, tar or asphaltum not to exceed 10% of weight of the commodity shipped, the shipper to so certify on shipping order or bill of lading.

Eliminate time-outs  
for repairs.  
Keep maintenance  
to a minimum.

## PSC HAULAGE CARS

With PSC Cars on the job, there's no need for frequent time-outs to overhaul. These strong, rugged, durable haulage cars help to increase production—keep vital materials on-the-move continuously in today's three shift production.



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DUMP CAR

**PRESSED STEEL CAR CO., INC.**

(INDUSTRIAL DIVISION)

**PITTSBURGH, PA.**



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of the  
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**KNOX**  
Valves-Couplings-Nipples-Clamps-Menders

29746. Fluorspar, Colorado, to Bauxite, Ark. To establish a rate of \$6 per net ton, C. L., min. wt. 80,000 lb. on fluorspar to Bauxite, Ark., from Boulder, Canon City, Denver, Echo, Feldspar, Ft. Logan, Roberts Spur, Sloss, Spike Buck, Texas Creek and Waterton, Colo. Rates are also proposed from Divide, Buena Vista, Riverside and Salida, Colo., the usual differentials over Denver, Colo.

SPFFC 3025. Dolomite, roasted (refractory dolomite, in granular form treated or untreated, clinkered or burned to a dead state), C. L. (See Note 3). From Bettsville, Gibsonburg, Maple Grove, Millersville, Woodville, Ohio. To New Orleans, La. (for export). Present rate—\*1980 (rates in cents per net ton). Proposed rate—\*676 (rates in cents per net ton).

Does not include cost of unloading, handling or wharfage or other terminal charges at the port; except will include switching charges to the extent that the absorption thereof is provided in tariffs lawfully on file with the Interstate Commerce Commission.

\*Subject to increase under Ex Parte No. 148.

†6th class per C. F. A. L. Tariff No. 548B, ICC No. 3184.

### Illinois

7497-42 (IRC). Limestone, ground, C. L. (See Note 3), but not less than 60,000 lb. (Rates in cents per net ton.)

	From	
	Valmeyer, Ill.	
To (Representative)	Pres.	Prop.
Keokuk, Ia. . . . .	240	204
Davenport, Ia. . . . .	260	237
Fort Madison, Ia. . . . .	240	215
Burlington, Ia. . . . .	260	226
Fulton, Ill. . . . .	260	248
E. Dubuque, Ill. . . . .	260	270
Rock Island, Ill. . . . .	260	237

	From	
	Prairie du Rocher, Ill.	
To (Representative)	Pres.	Prop.
Keokuk, Ia. . . . .	270	215
Davenport, Ia. . . . .	304	248
Fort Madison, Ia. . . . .	285	226
Burlington, Ia. . . . .	285	237
Fulton, Ill. . . . .	285	259
E. Dubuque, Ill. . . . .	285	281
Rock Island, Ill. . . . .	303	248

	From	
	Ste. Geneve, Mo.	
To (Representative)	Pres.	Prop.
Keokuk, Ia. . . . .	270	226
Davenport, Ia. . . . .	303	249
Fort Madison, Ia. . . . .	285	237
Burlington, Ia. . . . .	285	237
Fulton, Ill. . . . .	285	259
E. Dubuque, Ill. . . . .	285	292
Rock Island, Ill. . . . .	303	248

	From	
	Mosher, Mo.	
To (Representative)	Pres.	Prop.
Keokuk, Ia. . . . .	270	226
Davenport, Ia. . . . .	303	248
Fort Madison, Ia. . . . .	285	237
Burlington, Ia. . . . .	285	237
Fulton, Ill. . . . .	285	259
E. Dubuque, Ill. . . . .	285	292
Rock Island, Ill. . . . .	303	248

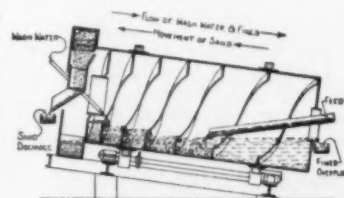
	From	
	Marlo, Mo.	
To (Representative)	Pres.	Prop.
Keokuk, Ia. . . . .	270	226
Davenport, Ia. . . . .	303	259
Fort Madison, Ia. . . . .	285	226
Burlington, Ia. . . . .	285	237
Fulton, Ill. . . . .	285	237
E. Dubuque, Ill. . . . .	285	292
Rock Island, Ill. . . . .	303	248

Proposed rates subject to Tariff of Increased Rates and Charges X-148.

7497-43 (IRC). Limestone, crushed, ground or pulverized, C. L. (See Note 3), but not less than 60,000 lb., from Valmeyer, Ill., to Chicago, Ill., and related points designated in Item 370 of Mo. Pac. R. R. Tariff 7908-I. Present—Class or combination. Proposed—20c net ton.

8587-4 (IRC). Sand, silica, molding, blast, core, engine, filter, fire, furnace, foundry, glass, grinding, polishing, C. L. (See Note 3), but not less than 40,000 lb., from Ottawa-Utica, Ill., district to Illinois, Ill. Present—Class or combination. Proposed—\$1.43 net ton (subject to Ex Parte 148 increase).

## WHAT IS THE HARDINGE COUNTER-CURRENT CLASSIFIER?



A slowly rotating drum on the inner surface of which is located a spiral flight attached to and revolving with the drum.

### How It Works

The material to be classified is fed in at one end and as the Classifier rotates the coarse particles settle out and are moved to the sand discharge end. The fines with the wash-water overflow at the opposite end.

### Advantages

Low maintenance — only one moving part in contact with the pulp.

### Uses

Classifying and sizing.  
Counter-Current washing.  
Sand and gravel washing.

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Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants.

Engineering Service



**EARLE C. BACON, Inc.**

17 John St. New York, N. Y.

IRC-9496. Sand, silica, processed, C. L. See Note 3, but in no case less than 40,000 lb., from Ottawa, Ill., to Zeigler, Ill. Present—\$2.22 net ton; proposed—\$1.79 net ton.

9499 (IRC). Stone, crushed, coated with asphaltum, oil or tar (See Note 3), but not less than 40,000 lb., from Krause, Ill.:

(Rates in cents per net ton)		
To (Sou. Ry. stations)	Pres.	Prop.
Lake and Belleville, Ill.....	126	
Miller to Glassland, incl....	138	
New Baden to Bartleso, incl..	151	
Posey to Centralia, incl.....	163	
Walnut Hull to Mt. Vernon, incl. ....	176	
Marlow to Boyleston, incl....	188	
Fairfield to Browns, incl....	214	
Bellmont to Mt. Carmel, incl..	227	
*Class or combination.		

## Southwestern

29238 (carrier). Cancel Item 210-A, 2nd Revised Page 18, S. A. L. Ry. I. C. C. A-7852, covering switching of crushed stone from Greystone, N. C., to Henderson, N. C.

29260 (shipper). Revise present rate on phosphate rock, C. L., Fla. mines to Carteret, N. J., from 716 to 649c gross ton.

29642. Lime, Southwest, to destinations in the Florida Peninsula. To establish a line of through commodity rates on lime for minima of 30,000 lb. and 50,000 lb. from Southwestern producing points to points in the Florida Peninsula, constructed on a so-called Jacksonville, Fla., combination, the Jacksonville factor being derived on basis of Southern lime scale for joint short-line distances to Jacksonville, from which 44c and 35c (depending on min. wt. of 30,000 lb. or 50,000 lb.) is deducted; and the "beyond" factor being the local rate, Jacksonville to destination. Rates are subject to Ex Parte 148 increases.

29675. Ground limestone, Colorado

Springs, Colo., to Kings Mills, Tex. To establish rate of \$2.59 per ton of 2000 lb. min. wt. 90 percent of marked capacity of car for application on ground limestone from Colorado Springs, Colo., to Kings Mills, Tex.

29916. Stone grinding pebbles, from, to and between points in the Southwest. To amend Item 7890, S. W. L. Tariff 173-P, and Item 9810, W. T. L. Tariff 386-D, to provide that Class 17½ rating in these items will also apply on stone grinding pebbles, loose or in packages, min. wt. 50,000 lb., from, to and between points in the Southwest, also points covered by W. T. L. Tariff 386-D.

30032. Limestone, Bessemer and Dolceto, Ala., to points in the southwest. Incorporate in both provisions appearing at the foot of pages 134 and 135 of Tariff 114-K, designated by reference mark 181 encircled and reference mark 186 encircled, the following phrase: "Does not apply . . . crushed, carloads, in open top equipment. For rates, see Item 1500." The resultant situation will be that rates in Items 1505 and 1506 can be applied on stone in closed equipment.

30034. Lime, Glencoe, Mosher and Ste. Genevieve, Mo., to Millington, Tenn. To revise the rate on lime, common, hydrated lime, quick or slack, straight or mixed, min. wt. 40,000 lb., C. L., from Glencoe, Mo., Mosher, Mo., and Ste. Genevieve, Mo., to Millington, Tenn., to be 13c per 100 lb., subject to Ex Parte 148 increase, or not higher than rates from the same origins to Memphis, Tenn.

30047. Lime, interstate points, to Angola, La. To amend page 20 and Item 295 of SWL Tariff 227D by canceling rates from all origins to Angola, La. Investigation has developed that there is no movement of lime to this point.

30054. Mica, Divide, Colo., to points in Texas. To establish carload rates on mica as described in Item 1222E, SWL Tariff 14U, from Divide, Colo., to Texas destinations shown in the above-referred-to item the same as the rates from Salida, Colo., i. e., \$5.25 per ton to Dallas and Ft. Worth, and \$7.75 to the Gulf points.

## Central

72238. Limestone (unburnt), ground or pulverized, in straight or mixed carloads, min. wt. 50,000 lb. Establish on, from Bedford and Bloomington, Ind., to stations in Ia., Mich., Minn. and Wis., rates as shown below.

Limestone (unburnt) ground or pulverized (Rates in cents per net ton)

To (Representative)	from	
	Bloomington, Ind.	Bedford, Ind.
	Prop. Rate	Prop. Rate
Abbotsford, Wis. ....	347	347
Albert Lea, Minn. ....	391	391
Ashland, Wis. ....	402	413
Beloit, Wis. ....	259	259
Bessemer, Mich. ....	391	391
Black Creek, Wis. ....	303	314
Brighton, Iowa ....	391	391
Carnforth, Iowa ....	391	391..
Center Jct., Iowa ....	347	347
Chippewa Falls, Wis. ....	358	369
De Witt, Iowa ....	347	347
Dodgeville, Wis. ....	292	303
Dover, Minn. ....	347	347
Eau Claire, Wis. ....	...	358
Farley, Iowa ....	347	347
Gagen, Wis. ....	347	358
Gifford, Iowa ....	391	391
Green Bay, Wis. ....	303	314
Grinnell, Iowa ....	391	391
Hurley, Wis. ....	391	391
Hudson, Wis. ....	380	391
Jefferson Jct., Wis. ....	259	281
Jordan, Minn. ....	391	391
Land O'Lakes, Wis. ....	358	380
Lemington, Wis. ....	380	391
Manitowoc, Wis. ....	292	303
Madison, Wis. ....	358	369
Menasha, Wis. ....	292	303
Merrillan, Wis. ....	336	347
Minneapolis, Minn. ....	391	402
Minnesota City, Minn. ....	347	358
Montgomery, Minn. ....	391	391

# MoteTons per Hour

## WITH AN I. B. BUCKET

Properly designed—as a result of over 50 years experience—Industrial Brownhoist buckets are light in weight yet of extra sturdy construction. Large sheaves reduce rope wear and maintenance to a minimum. Deep clean bites practically eliminate hand shoveling. Standard types (rope-reeve, power-wheel, link-type) in stock for immediate delivery. Write for complete information.



## INDUSTRIAL BROWNHOIST

RAY CITY, MICH. • DISTRICT OFFICES: NEW YORK, PHILADELPHIA, PITTSBURGH, CLEVELAND, CHICAGO

Monticello, Wis. ....	358	369
Morning Sun, Iowa ....	391	391
Necedah, Wis. ....	314	325
Neenah, Wis. ....	292	303
Nekoosa, Wis. ....	336	347
New London, Wis. ....	303	314
New Richmond, Wis. ....	391	391
Oelwein, Iowa ....	347	347
Oneida, Iowa ....	347	347
Oshkosh, Wis. ....	392	303
Parkersburg, Iowa ....	391	391
Pickering, Iowa ....	391	391
Plymouth, Wis. ....	270	292
Postville, Iowa ....	347	347
Prentice, Wis. ....	358	380
Prairie du Chien, Wis. ....	314	325
Rhineland, Wis. ....	347	358
Ripon, Wis. ....	292	303
Rochester, Minn. ....	391	391
Rothschild, Wis. ....	347	347
Shakopee, Minn. ....	391	391
Stevens Point, Wis. ....	314	336
Stiles Jct., Wis. ....	314	325
Superior, Wis. ....	413	424
Tipton, Iowa ....	347	347
Tomahawk, Wis. ....	347	358
Waterloo, Iowa ....	391	391
Waterville, Minn. ....	391	391
Waupaca, Wis. ....	303	314
Waverly, Iowa ....	391	391
Wheatland, Iowa ....	347	347
White Lake, Wis. ....	325	347
Winona, Minn. ....	347	347
Wisconsin Jct., Wis. ....	347	358
Woodruff, Wis. ....	358	380
Wisconsin Rapids, Wis. ....	336	347
Zumbrota, Minn. ....	391	391

72272. Stone, viz.: Fluxing, furnace, foundry, melting or refractory, unburned, in bulk, C. L. Establish on, from Marengo and Milltown, Ind., to Middletown, O., 164c per gross ton, subject to Ex Parte 148 increase.

72265. Feldspar, flint and ore, barytes, C. L., min. wt. 80,000 lb. Establish on, to New Castle, Pa., from Bathurst, Ont., 27c; Buckingham, Que., 29c; Glen Tay, Godfrey, and Vernon, Ont., 27c, subject to Ex Parte 148 increase, subject to routing as per CP Ry Trf. E-2900.

72348. Lime, agricultural, common, fluxing, hydrated, quick or slaked, in straight or mixed C. L. Establish on, from Menominee, Mich., to Ashtabula, O., 23c, min. wt. 30,000 lb.; 18c, min. wt. 50,000 lb., subject to Ex Parte 148 increase, via specific routes.

72402. Crushed stone, when shipped in bulk, in open top cars, C. L. Establish on, from Greenfield, O., to Osborn, O., 99c per net ton, plus Ex Parte 148 increase, via D. T. & I. R. R., Maitland, O., Erie R. R.

72403. Limestone, ground or pulverized (unburnt); crushed stone screenings, not ground or pulverized (unburnt); stone dust (unburnt), C. L., min. wt. 60,000 lb. Establish on, from Northwestern Ohio Group 1 origins, to Mallory, W. Va., 259c per net ton, subject to increase under Ex Parte 148.

72404. Limestone, ground or pulverized, unburnt, C. L., min. wt. 60,000 lb. Establish on, from Prairie du Rocher, and Valmeyer, Ill., to Fairmont, W. Va., 402c per net ton, subject to I. C. C. Ex Parte 148.

72412. (a) Sand (industrial), C. L.; (b) sand (except industrial), C. L.; (c) sand (except industrial), in open top equipment, C. L. (2) Establish on, from the so-called Paines Group, viz.: Paines and Hemlock, Mich.

To	(1)	(2)
Cheviot, Ohio .....	275	275
Cincinnati, Ohio .....	264	264

(1)—(c) Open cars, being proposed rates in cents per net ton, subject to Ex Parte 148 increase.

(2)—(a) and (b) Closed cars, being proposed rates in cents per net ton, subject to Ex Parte 148 increase.

72421. Sand (except industrial), and gravel in closed equipment, (b) Sand (except industrial), and gravel, in open top equipment (see Note 6). Establish on, from Madison, O., to Niagara Falls, N. Y., description (a) 198c, and description (b) 154c per net ton, subject to Ex Parte 148 increase (see Note 6).

72419. Slag (refuse product of lead or zinc furnaces, having no commercial value for the further extraction of metal), in open-top cars. Establish on, from Federal, Ill., to Wabash, Ind., 171c per net ton, subject to Ex Parte 148 increase.

72426. Slag, in open top cars, C. L. (See Note 3). Establish on, from Glen Ferris, W. Va., to Charleston, Dunbar and W. Charleston, W. Va., 77c per net ton, subject to Ex Parte 148 increase, viz.: N. Y. C. (W) direct.

72431. Sand (except industrial), or gravel, in open top cars, also crushed stone and crushed stone screenings, in bulk in open top cars, C. L. Establish on, from Kenneth and Logansport, Ind., to Lucerne, Grass Creek, Kewanna, Ind., 66c; Delong and Culver, Ind., 72c per net ton.

72432. Sand (except industrial), gravel,

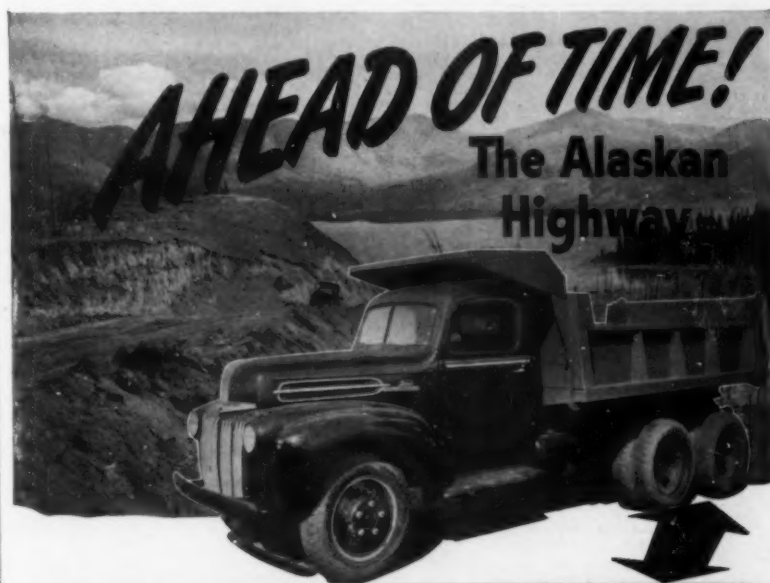
and crushed stone, in open top cars, C. L. Establish on, from Terre Haute, Ind., to Brazil, Ind., 50c; to Stearleys and Center Point, Ind., 66c; from Greencastle, Ind., to Stearleys and Center Point, Ind., 66c per net ton.

\*To expire June 20, 1943.

72433. Sand (except industrial), or gravel, in open top cars, C. L. Establish on, from Wolcottville, Ind., to Kendallville, Avilla, LaOtto, Hometown and Wallen, Ind., 55c per net ton.

72434. Sand (except industrial) and gravel, and crushed stone and crushed stone screenings, in open top cars, C. L. Establish on, from Warsaw-Winona Lake, Colcottville, Kenneth and Logansport, Ind., to various points in Indiana, rates as shown below:

Rates on (1) sand and gravel. (2) Crushed stone, in open top cars. Minimum weight 90 per cent of marked ca-

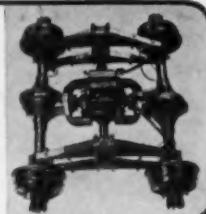


## AMERICA'S LIFE LINE TO THE NORTH IS OPEN!—

Operating months ahead of even the stiff schedule set up by Army engineers!

A tough assignment in rough country calling for husky, durable, efficient equipment — and right on the job is a big fleet of trucks with

Put TWO driving axles under the load instead of one, double the gear speeds, improve springing and load flotation, gain vastly superior tractive ability.



## THORNTON FOUR - REAR - WHEEL DRIVE

By means of THORNTON installations these trucks have been converted from 1½ to 2-ton vehicles into heavy-duty, four-rear-wheel drive trucks handling 6-yard dump bodies.

Standard heavy-duty trucks are not available today—but here is the answer to that problem. You can convert new or used 1½ to 3-ton trucks

to husky, reliable heavy-duty units of more than twice the capacity. They actually do the job better and cost less.

While Uncle Sam still approves, act quickly! Contact your nearest Truck-stell-THORNTON dealer or wire the factory direct. Trained men will engineer this equipment to suit YOUR OWN PARTICULAR JOB.

**THORNTON TANDEM CO.**  
8719-8779 GRINNELL AVE. DETROIT, MICH.

Manufacturers also of the THORNTON automatic-locking DIFFERENTIAL.  
"When you need TRACTION you need THORNTON"

capacity of car, except when car is loaded to visible or cubical capacity, actual weight will apply.

(Rates in cents per net ton.) Description (1), from Warsaw-Winona Lake, Ind., to Columbia City, Ind., proposed rate 55c; to South Whitley, Newton, Laketon and Roann, Ind., 66c.

From Wolcottville, Ind., to Columbia City, Ind., 55c; South Whitley, Ind., 66c. From Kenneth, Ind., to Columbia City, Ind., 66c; No. Manchester, Ind., 63c; Roann, Pettyville, Mexico, Hoover and Adamsboro, Ind., 66c.

Description (2) from Logansport, Ind., to Columbia City, No. Manchester, Roann, Pettyville, Mexico, Hoover and Adamsboro, Ind., 66c.

72439. Sand (except industrial) and gravel, C. L. Establish on, from Terre Haute, Ind., to Sand Creek, Ind., 72c; Waveland and Browns Valley, Ind., 77c per net ton.

72444. Slag, commercial, crushed (a product of iron and steel blast or open furnaces), in open top cars, C. L. Establish on, from Hamilton, O., to Vandalia, O., 88c per net ton.

72445. Lime, common, hydrated, quick or slaked, C. L., min. wt. 30,000 lb. Establish on from Speed, Ind., to Norton, Va., 484c, min. wt. 30,000 lb; 385c per net ton, min. wt. 50,000 lb.

72459. Sand, ground or pulverized, in box cars, C. L. Establish on, from Silica, O., to Walkerville, Ont., 22c per net ton, subject to Ex Parte 148 increase.

72464. Slag, commercial, crushed (a product of iron and steel blast or open hearth furnaces), in open top cars, C. L. (See Note 3). Establish on, from Hamilton, O., to Heath, O., 138c per net ton.

## New England

56698 (1-A). To cancel commodity rates on feldspar and syenite, crude or ground,

C. L., from Bath, Bates, Bethel, Cathance, Me., Cold River, Dunns, Keene, N. H., Littlefield, Norway and Topsham, Me., to various destinations in Trunk Line territory as published in Item Nos. 380 and 385 of B&M RR Tariff ICC No. A3050 and Item 365 of GT Ry Tariff ICC No. 228 and apply in lieu thereof Class 21 rates as published by exceptions to Official Classification, Item 1930 of NEFA TB Tariff No. 30-I, ICC No. 448.

59626 (1-A). To cancel rates on stone, crushed; grout and rip-rap from Webstersville, Vt., to Gloversville and Johnstown, N. Y., as named in M&WR RR ICC No. B-2, permitting class or combination rates to apply in lieu thereof. Reason: No interline arrangements have been put in effect.

59636 (1-A). Stone, crushed; grout and rip-rap, min. wt. 80,000 lb. (See Note 3), from Webstersville, Vt.

To	Pres.	Prop.
Eastport, L. I., N. Y.	333	405
Huntington, L. I., N. Y.	316	377
Jamaica, L. I., N. Y.	305	347
Port Jefferson, L. I., N. Y.	333	405
Valley Stream, L. I., N. Y.	305	365

Rates being per net ton. Reason: To revise rates to a compensatory basis.

## Court Upsets Indian Gypsum Lease

NATIONAL GYPSUM CO., Buffalo, N. Y., will have to renegotiate its mining leases with the Federal Government on the Tonawanda Indian Reservation in New York, according to a ruling by Federal Judge John Knight who declared "null and void" a New York State law adopted in 1909 under which National Gypsum obtained its leases. The court held that the United States government, suing on behalf of the Indians, was entitled to summary judgment. Under authority of section 85 of the Indian law of New York, the gypsum leases were issued for a 20-year period on April 26, 1922, but were extended in 1936 for an additional 14 years beginning May 1, 1942.

## COMING CONVENTIONS

**American Concrete Institute, Chicago, Ill., February 17 and 18, 1943.**

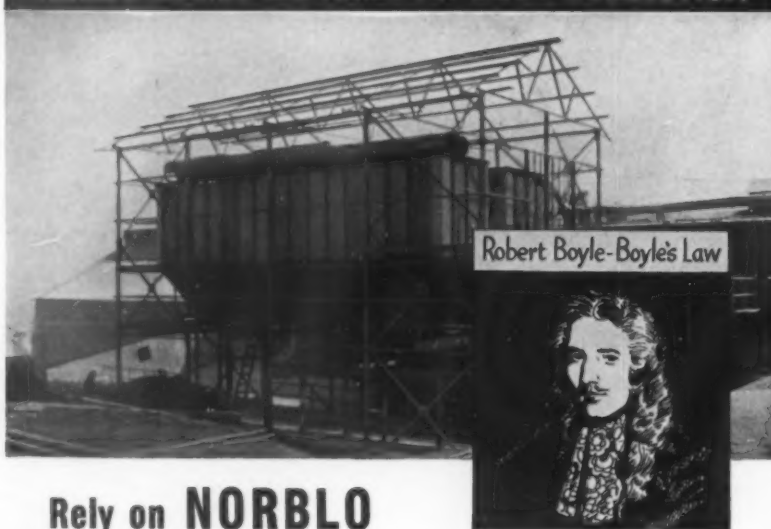
**American Concrete Pipe Association, Drake Hotel, Chicago, Ill., February 17 and 18.**

**National Concrete Masonry Association, Sherman Hotel, Chicago, Ill., February 16 and 17, 1943.**

**National Ready Mixed Concrete Association, Hotel Statler, Cleveland, Ohio, January 27 to 29, 1943.**

**National Sand and Gravel Association, Hotel Statler, Cleveland, Ohio, January 27 to 29, 1943.**

## Nature makes the Rules for DUST COLLECTION



## Rely on NORBLO

## Engineering for Your Post-War Planning

When the war is over most authorities predict a tidal wave of modernization in all industries. In the cement industry a truly modern plant will call for individual NORBLO Automatic Bag Type Dust Arresters on each packer, returning the salvaged cement to its own stream, with no cement thrown away and every bag up to specifications.

With NORBLO installations of this type the packhouse is cleaner than outdoors. They pay for themselves in direct salvage and by increasing the salability of the product.

# Norblo

## DUST COLLECTION

THE NORTHERN BLOWER COMPANY

6409 BARBERTON AVENUE • CLEVELAND, OHIO

## Cement Production Up: Lime and Gypsum Down

PRODUCTION OF MINERALS used primarily in construction was predominantly upward, in 1942 as compared with 1941, according to statistics of the U. S. Bureau of Mines. Cement sales increased about 10 percent, largely because of important military construction projects such as airfields and military roads. For the same reason, there was an increase in sand and gravel products of about 7 percent, and stone production of about 9 percent, because these materials are used extensively as aggregates in concrete construction. On the other hand, lime sales decreased approximately 11 percent, and gypsum sales about 6 percent due chiefly to the shrinkage in civilian building construction. There was a large increase in demands for molding sand and for limestone used as flux in blast furnaces. An extension in the fertilizer industry led to an increase of about 6 percent in the sales of phosphate rock.

All-time high records of production were registered in 1942 for several important non-metallic mineral commodities. The cement output exceeded in quantity the previous high of

1926. Other widely used commodities that reached all-time high sales records in 1942 were sand and gravel, stone, crude barite, phosphate rock, and high-grade clays. Because of the exceptionally high demands of steel furnaces, fire clay and fluorspar sales far outstripped all previous records. Sales of potash salts reached an all-time high in 1942, and for the first time exceeded domestic demands.

Increases in sales of many non-metallic minerals are to be attributed to the striking trend at this time to substitute non-metallic products for metals in order to conserve the latter for direct military use. Outstanding examples are glass containers to take the place of tin cans, lightweight concrete to reduce the need of structural steel, and gypsum lath to take the place of metal lath.

### Mica Notes

Mica prices have been increased by the Colonial Mica Corporation, federal government purchasing agents, for New Hampshire products. Prices have been increased from 15 to 120 percent, depending upon size and quality. Punch mica is up from 22 to 30c per lb. Sheet mica, for example, in the 1½ by 2-in. size was increased from \$1.10 to \$2.40 per lb. Second

quality mica prices are 85 percent of those for first quality. In addition, bonuses of 25 to 40 percent are being paid for refinements in classification and trimming, to the degree that they approach India standards.

The Georgia Department of Natural Resources is working on a plan to establish a centrally located purchasing house for the small mica producer. Considerable mica is now being mined in Lamar county.

Everett Rogers of the Shelby, N. C., Chamber of Commerce, has obtained five leases for mica mining. D. J. Smith of the Colonial Mica Corporation is examining property for machinery needed.

### Temporary Gravel Plant

BASALT ROCK Co., has set up a temporary gravel plant at Geyersville, Calif., for operation about four months. Production will be between 50 and 70 carloads daily. Harold Naylor of Healdsburg, Calif., will manage the plant.

### Own Fuel

ASH GROVE LIME AND PORTLAND CEMENT Co., Chanute, Kan., recently brought in two new gas wells.



ELEVATOR BUCKETS  
ALL TYPES — ALL SIZES  
LIGHT AND HEAVY STEEL PLATE CONSTRUCTION  
HOPPERS — CHUTES — CASINGS

## HENDRICK MANUFACTURING CO.

47 Dundaff Street, Carbondale, Pa.

Branch Offices in Principal Cities—Consult Telephone Directory  
Makers of Hendrick Perforated Metals, Hendrick Mitco Shur-Site Treads,  
Hendrick Mitco Armorgrids

# SPEED

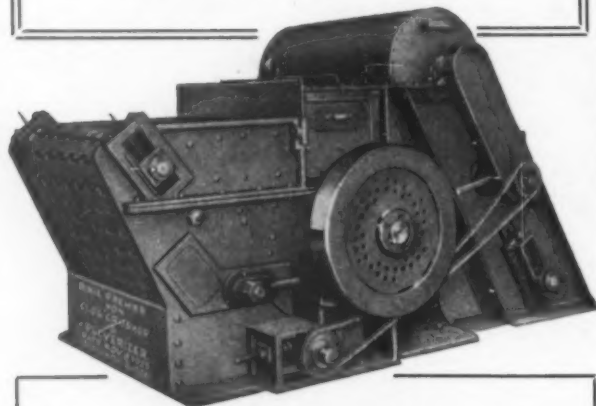
## WAR ORDERS

with Screens of  
Hendrick Perforated Plate

On vibrating, revolving, or shaking screens, the long wearing qualities of Hendrick Perforated Plate gives maximum service. It is available in any size or shape of perforation, single or double corrugation, flat or rolled to any diameter. The uniform mesh is maintained for the life of the screen and full clearance prevents clogging.

## WHEN PRODUCTION CANNOT LAG

DIXIE GETS THE CALL!



### **DIXIE** Non-Clog **HAMMERMILLS**

#### NOTE THESE TYPICAL TOUGH JOBS LICKED BY DIXIES

1. Replaced four crushers for high moisture content bauxite . . . cut power in half . . . reduced drying costs . . . increased production.
2. Efficiently crushing clay balls to reclaim phosphate in Florida phosphate plants.
3. Crushing phosphate muck in T.V.A. Tennessee plant.

#### HERE'S WHY . . .

The Dixie Non Clog Hammermill is the only crusher with a moving breaker plate. Provides positive mechanical feed. No manual pushing of material needed. Even the most plastic, wet, clayey material will not slow production or clog hammers. This feature alone has saved the cost of 10 men in one company!

And because the Dixie moving breaker plate can be moved forward or backward from the hammer points, quality and size of production can be controlled. This feature provides additional assurance against clogging. These are but two of Dixie's outstanding features. Send coupon below for free booklet, "More Efficient Crushing of Raw Materials" which gives complete facts.

#### **DIXIE MACHINERY MFG. CO.**

4202 Goodfellow Blvd., St. Louis, Mo.

#### **GET THE FACTS!**

Dixie Machinery Mfg. Co.,  
4202 Goodfellow Blvd., St. Louis, Mo.

Please send free booklet on Dixie Non-Clog Hammermills. We want to crush.....

Name .....

Company .....

Address .....

City .....State .....



Faster—because Blaw-Knox buckets handle more pay load with less dead weight. And Blaw-Knox buckets have many such superior structural features as the rigid head to maintain cable alignment, prevent wear—and sealed ball-bearing sheaves in the lever arm to improve operating efficiency.

Write for catalog . . . Or send us your specifications and we'll be glad to show you how Blaw-Knox buckets can meet your needs—economically!

### **BLAW-KNOX BUCKETS**

BLAW-KNOX DIVISION of Blaw-Knox Company  
Farmers Bank Building, Pittsburgh, Pa.

## **GENERAL**



**SHOVELS AND CRANES  
GIVE YOU MORE!**

**THEY DESERVE GOOD CARE.**

**THE GENERAL EXCAVATOR CO.**

MARION, OHIO

# Introduction to Directory of Suppliers

**P**ROBABLY there never was a time when so much difficulty had to be met with in securing repair parts and supplies, as at present. This is no fault of the manufacturer and supplier; it is the result of war.

The publisher of **ROCK PRODUCTS** is frequently asked to supply the names of manufacturers of certain types of equipment, evidently with the intent on the part of the inquirer of seeking some repair part. Possibly the machine hasn't required repairs before, or the repair parts have been supplied locally.

So, there is a real reason at this time for publishing this directory of manufacturers of the principal kinds of machinery and equipment made for the rock products industries.

Those in bold-face type, as long-time advertisers, are especially recommended. Nevertheless the directory has been made as complete as possible; but necessarily has been confined to types of machinery and equipment made for this field, and does not attempt to include all the kinds of machinery or equipment made by these manufacturers.

## ADMIXTURES (Aggregate)

Calcium Chloride Ass'n, Detroit, Mich.

## AERIAL TRAMWAYS

American Chain & Cable Co., Inc., Bridgeport, Conn.  
American Steel & Wire Co., Cleveland, O.  
Columbus Steel Co., San Francisco, Calif. (United States Steel Corp. Sub.)  
Hazard Wire Rope Co., Wilkes Barre, Penna.  
Robins Conveying Belt Co., Passaic, N. J.  
John A. Roebling's Sons Co., Trenton, N. J.

## AFTERCOOLERS (Air)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Chicago Pneumatic Tool Co., New York, N. Y.  
Gardner-Denver Co., Quincy, Ill.  
Ingersoll-Rand Co., New York, N. Y.  
F. L. Smith & Co., New York, N. Y.  
Sullivan Mch. Co., Michigan City, Ind.

## AGITATORS (Bin Vibrators, Etc.)

Blaw-Knox Co., Blawnox, Penna.  
Denver Equip. Co., Denver, Colo.  
Diamond Iron Wks., Inc., Minneapolis, Minn.  
The Dorr Co., Inc., New York, N. Y.  
Hetherington & Berner, Inc., Indianapolis, Ind.  
Jeffrey Mfg. Co., Columbus, O.  
New Haven Vibrator Co., New Haven, Conn.  
The Patterson Foundry & Mach. Co., E. Liverpool, O.  
Separations Eng. Corp., New York, N. Y.  
F. L. Smith & Co., New York, N. Y.  
Syntrol Co., Homer City, Penna.

## AIR COMPRESSORS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Buhl Co., Chicago, Ill.  
Chicago Pneumatic Tool Co., New York, N. Y.  
Continental Motors Corp., Detroit, Mich.  
Curtis Pneumatic Mch., Inc., St. Louis, Mo.  
Davey Compressor Co., Kent, O.  
De Laval Steam Turbine Co., Trenton, N. J.  
Fuller Co., Catsaqua, Penna.  
Gardner-Denver Co., Quincy, Ill.  
Ingersoll-Rand Co., New York, N. Y.  
Kent Mill Co., Brooklyn, N. Y.  
Leifol Co., Milwaukee, Wis.  
Mine & Smelter Supply Co., Denver, Colo.  
Nordberg Mfg. Co., Milwaukee, Wis.  
O. K. Clutch & Mch. Co., Columbia, Penna.  
Pennsylvania Pump & Compressor Co., Easton, Penna.  
Quincy Compressor Co., Quincy, Ill.  
Schramm, Inc., West Chester, Penna.  
Sullivan Mch. Co., Michigan City, Ind.  
Worthington Pump & Mch. Corp., Harrison, N. J.

## AIR (Compressed) CONVEYORS

American Blower Corp., Detroit, Mich.  
American Foundry Equip. Co., Mishawaka, Ind.  
Babcock & Wilcox Co., New York, N. Y.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Blaw-Knox Co., Blawnox, Penna.  
Connecticut Blower Co., Hartford, Conn.  
Continental Gin Co., Birmingham, Ala.  
Dracoe Corp., Cleveland, O.  
Fuller Co., Catsaqua, Penna.  
Grundler Crusher & Pulverizer Co., St. Louis, Mo.  
Holly Pneumatic Systems, Inc., New York, N. Y.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Parsons Eng. Corp., Cleveland, O.  
Research Corp., New York, N. Y.

Schneible, Claude B. Co., Chicago, Ill.  
F. L. Smith & Co., New York, N. Y.  
B. F. Sturtevant Co., Boston, Mass.

## AIR FILTERS

Air-Maze Corp., Cleveland, O.  
Alemite Corp., Chicago, Ill.  
American Air Filter Co., Louisville, Ky.  
Blaw-Knox Co., Blawnox, Penna.  
Cleveland Rock Drill Co., Cleveland, O.  
Connecticut Blower Co., Hartford, Conn.  
Dracoe Corp., Cleveland, O.  
Holly Pneumatic Systems, Inc., New York, N. Y.  
Parsons Eng. Corp., Cleveland, O.  
Claude B. Schneible Co., Chicago, Ill.  
Staynew Filter Corp., Rochester, N. Y.

## AIR SEPARATORS

American Air Filter Co., Inc., Louisville, Ky.  
Blaw-Knox, Blawnox, Penna.  
Bradley Pulverizer Co., Allentown, Penna.  
Clark Dust Control Co., Chicago, Ill.  
Combustion Eng. Corp., Chicago, Ill.  
Hardinge Co., Inc., York, Penna.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Lime & Hydrate Plants Co., York, Penna.  
Parsons Eng. Corp., Cleveland, O.  
Raymond Pulverizer Division, Chicago, Ill.  
Separations Eng. Corp., New York, N. Y.

F. L. Smith & Co., New York, N. Y.  
Stephens - Adamson Mfg. Co., Aurora, Ill.  
Sturtevant Mill Co., Dorchester, Mass.  
Universal Road Mch. Co., Kingston, N. Y.  
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

## ALLOYS

American Manganese Steel Div., Chicago Heights, Ill.  
Babcock & Wilcox Co., New York, N. Y.  
Joseph T. Ryerson & Sons, Inc., Chicago, Ill.  
Stutz-Sickles Co., Newark, N. J.  
Wall-Colmonoy Corp., Detroit, Mich.

## ANGLED OZERS

R. G. LeTourneau, Inc., Peoria, Ill.

## ASH RECEPACLE MOLDS (Concrete Products)

Sanitary Garbage Box Co., Chicago, Ill.

## ASH & REFUSE HANDLING EQUIPMENT

C. O. Bartlett & Snow Co., Cleveland, O.  
George Haiss Mfg. Co., New York, N. Y.  
Hetherington & Berner, Inc., Indianapolis, Ind.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.

## ASPHALT (Paving) MIXING PLANTS

Barber-Green Co., Aurora, Ill.  
The Columbus Conveyor Co., Columbus, O.  
Hetherington & Berner, Inc., Indianapolis, Ind.  
Iowa Mfg. Co., Cedar Rapids, Ia.  
Lancaster Iron Wks., Inc., Lancaster, Penna.  
McCarter Iron Wks., Inc., Norristown, Penna.  
The Simplicity System Co., Chattanooga, Tenn.  
Universal Eng. Corp., Cedar Rapids, Ia.  
Warren Bros. Roads Co., Cambridge, Mass.

## AUTOMATIC WEIGHING DEVICES (See Weighing Equipment)

## BABBITT METAL

Earle C. Bacon, Inc., New York, N. Y.  
Mine & Smelter Supply Co., Denver, Colo.  
National Bearing Metals Corp., St. Louis, Mo.  
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Penna.

## BACKFILLERS

Barber-Greene Co., Aurora, Ill.  
Bay City Shovels Inc., Bay City, Mich.  
Buckeye Traction Ditcher Co., Findlay, O.  
Continental Roll & Steel Foundry Co., East Chicago, Ind.  
General Excavator Co., Marion, O.  
Link-Belt Speeder Corp., Chicago, Ill.  
Northwest Eng. Co., Chicago, Ill.

## BAG CLEANERS

Jackson & Church Co., Saginaw, Mich.  
Northern Blower Co., Cleveland, O.  
Sprout, Waldron & Co., Muncy, Penna.

## BAGGING MACHINES

Baggpak, Inc., New York, N. Y.  
International Paper Prod. Div., New York, N. Y.  
Richardson Scale Co., Clifton, N. J.  
St. Regis Paper Co., New York, N. Y.

## BAGS (Dust Collector)

American Air Filter Co., Inc., Louisville, Ky.  
Chase Bag Co., Chicago, Ill.  
Dracoe Corp., Cleveland, O.  
Northern Blower Co., Cleveland, O.  
Pangborn Corp., Hagerstown, Md.  
Parson Eng. Corp., Cleveland, O.  
W. W. Sly Mfg. Co., Cleveland, O.  
Sprout, Waldron & Co., Muncy, Penna.  
Western Precipitation Corp., Los Angeles, Calif.  
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

## BAGS (Paper, Cloth)

Baggpak, Inc., New York, N. Y.  
Bemis Bros. Bag Co., St. Louis, Mo.  
Chase Bag Co., Chicago, Ill.  
George & Sherrard Paper Co., New York, N. Y.  
Hammond Bag & Paper Co., Wellsville, N. Y.  
International Paper Prod. Div., New York, N. Y.  
Jaite Co., Jaite, O.  
Raymond Bag Co., Middletown, O.  
St. Regis Paper Co., New York, N. Y.  
Universal Paper Bag Co., New Hope, Penna.

## BALERS (Bark)

Jackson & Church Co., Saginaw, Mich.

## BALL BEARINGS

New Departure Division, General Motors Corp., Bristol, Conn.  
Nile Ball Bearing Co., Philadelphia, Penna.  
Norma-Hoffmann Bearing Corp., Stamford, Conn.  
S. K. F. Industries, Inc., Philadelphia, Penna.  
Stephens - Adamson Mfg. Co., Aurora, Ill.  
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

## BALL MILLS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Earle C. Bacon, Inc., New York, N. Y.  
Denver Equip. Co., Denver, Colo.  
Elmes Corp., Salt Lake City, Utah  
Hardinge Co., Inc., York, Penna.  
The Mine & Smelter Supply Co., Denver, Colo.  
Patterson Foundry & Mach. Co., E. Liverpool, O.  
F. L. Smith & Co., New York, N. Y.  
Straub Mfg. Co., Oakland, Calif.

## BALLS AND SLUGS (Grinding)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

## Babcock & Wilcox Co., New York, N. Y.

Earle C. Bacon, Inc., New York, N. Y.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Columbus Steel Co., San Francisco, Calif.  
Hardinge Co., Inc., York, Penna.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
The Mine & Smelter Supply Co., Denver, Colo.  
National Malleable & Steel Castings Co., Cleveland, O.  
The Patterson Foundry & Mach. Co., E. Liverpool, O.  
S. F. K. Industries, Inc., Philadelphia, Penna.  
F. L. Smith & Co., New York, N. Y.  
Taylor-Wharton Iron & Steel Co., High Bridge, N. J.  
Traylor Eng. & Mfg. Co., Allentown, Penna.

## BARGES (Sand and Gravel, etc.)

Bethlehem Steel Co., Bethlehem, Penna.  
Chicago Bridge & Iron Co., Chicago, Ill.  
Lancaster Iron Wks., Inc., Lancaster, Penna.

Maddox Foundry & Mach. Wks., Inc., Archer, Fla.  
Manitowoc Eng. Wks., Manitowoc, Wis.

Meckum Eng. Inc., Chicago, Ill.

## BARREL PACKING MACHINERY

The Jeffrey Mfg. Co., Columbus, O.  
Syntrol Co., Homer City, Penna.

## BARRELS (Steel, Wood)

Republic Steel Corp., Cleveland, O.

## BATCHERS (Weighing & Volumetric)

Anchor Concrete Mch. Co., Columbus, O.  
Barber Greene Co., Aurora, Ill.  
Blaw-Knox Co., Blawnox, Penna.  
Bodinson Mfg. Co., San Francisco, Calif.  
Butler Bin Co., Waukesha, Wis.  
Construction Mch. Co., Waterloo, Ia.  
Conveyor Co., Inc., Los Angeles, Calif.

## Heltzel Steel Form & Iron Co., Warren, O.

Jackson & Church Co., Saginaw, Mich.  
The Jeffrey Mfg. Co., Columbus, O.  
The Kron Co., Bridgeport, Conn.  
Noble Co., Oakland, Calif.  
Ransome Concrete Mch. Co., Dunellen, N. J.  
Richardson Scale Co., Clifton, N. J.  
Scientific Concrete Service Corp., Elizabeth, N. J.  
Stearns Mfg. Co., Inc., Adrian, Mich.

## BATCHING PLANTS

Blystone Mfg. Co., Cambridge Springs, Penna.  
Bodinson Mfg. Co., San Francisco, Calif.

Butler Bin Co., Waukesha, Wis.  
The Columbus Conveyor Co., Columbus, O.

Continental Gin Co., Birmingham, Ala.  
Conveyor Co., Inc., Los Angeles, Calif.

Heltzel Steel Form & Iron Co., Warren, O.  
Jackson & Church Co., Saginaw, Mich.

Miles Mfg. Co., Jackson, Mich.  
Neft & Fry Co., Camden, O.  
Stephens - Adamson Mfg. Co., Aurora, Ill.

## BEARING METALS

Link-Belt Co., Chicago, Ill.  
Magnolia Metal Co., Elizabeth, N. J.  
Mine & Smelter Supply Co., Denver, Colo.  
National Bearing Metals Corp., St. Louis, Mo.  
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Penna.

## BEARINGS

Auburn Ball Bearing Co., Rochester, N. Y.

# DIRECTORY

Earle C. Bacon, Inc., New York, N. Y.  
 Rodinson Mfg. Co., San Francisco, Calif.  
 Continental Gin Co., Birmingham, Ala.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 Link-Belt Co., Indianapolis, Ind.  
 Manhattan Rubber Mfg. Div., Passaic, N. J.  
 National Bearing Metals Corp., St. Louis, Mo.  
 New Departure Div., General Motors Corp., Bristol, Conn.  
 Nice Ball Bearing Co., Philadelphia, Penna.  
 Rollway Bearing Co., Syracuse, N. Y.  
 S. K. F. Industries, Inc., Philadelphia, Penna.  
 Sprout, Waldron & Co., Muncy, Penna.  
 Stephens - Adamson Mfg. Co., Aurora, Ill.  
 Timken Roller Bearing Co., Canton, O.

**BEARINGS (Anti-Friction)**  
 Auburn Ball Bearing Co., Rochester, N. Y.  
 Earle C. Bacon, Inc., New York, N. Y.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 Hetherington & Berner, Inc., Indianapolis, Ind.  
 The Jeffrey Mfg. Co., Columbus, O.  
 Link-Belt Co., Indianapolis, Ind.  
 New Departure Div., General Motors Corp., Bristol, Conn.  
 Nice Ball Bearing Co., Philadelphia, Penna.  
 Oliver Mch. Co., Grand Rapids, Mich.  
 Palmer-Bee Co., Detroit, Mich.  
 Rollway Bearing Co., Inc., Syracuse, N. Y.  
 Simplicity System Co., Chattanooga, Tenn.  
 S. K. F. Industries, Inc., Philadelphia, Penna.  
 Sprout, Waldron & Co., Muncy, Penna.  
 Standard Pressed Steel Co., Jenkintown, Penna.  
 Stephens - Adamson Mfg. Co., Aurora, Ill.  
 Timken Roller Bearing Co., Canton, O.  
 Webster Mfg. Co., Tiffin, O.

**BEARINGS (Thrust)**  
 Auburn Ball Bearing Co., Rochester, N. Y.  
 Earle C. Bacon, Inc., New York, N. Y.  
 Continental Gin Co., Birmingham, Ala.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 The Jeffrey Mfg. Co., Columbus, O.  
 Link-Belt Co., Indianapolis, Ind.  
 Nice Ball Bearing Co., Philadelphia, Penna.  
 Norma-Hoffmann Bearings Corp., Stamford, Conn.  
 Palmer-Bee Co., Detroit, Mich.  
 Rollway Bearing Co., Inc., Syracuse, N. Y.  
 S. K. F. Industries, Inc., Philadelphia, Penna.  
 Sprout, Waldron & Co., Muncy, Penna.  
 Stephens - Adamson Mfg. Co., Aurora, Ill.  
 Timken Roller Bearing Co., Canton, O.  
 Webster Mfg. Co., Inc., Tiffin, O.

**BELT CONVEYORS AND ACCESSORIES**  
 Earle C. Bacon, Inc., New York, N. Y.  
 Barber-Greene Co., Aurora, Ill.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Rodinson Mfg. Co., San Francisco, Calif.  
 Chain Belt Co., Milwaukee, Wis.  
 The Columbus Conveyor Co., Columbus, O.  
 Continental Gin Co., Birmingham, Ala.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 Diamond Iron Wks., Inc., Minneapolis, Minn.  
 Godfrey Conveyor Co., Elkhart, Ind.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.  
 Iowa Mfg. Co., Cedar Rapids, Ia.  
 Jackson & Church Co., Saginaw, Mich.  
 The Jeffrey Mfg. Co., Columbus, O.  
 Link-Belt Co., Chicago, Ill.  
 The Mine & Smelter Supply Co., Denver, Colo.  
 Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
 Portable Mch. Div., A. B. Farquhar Co., York, Penna.  
 Rogers Iron Wks. Co., Joplin, Mo.  
 Sandvik Steel, Inc., New York, N. Y.

Screw Conveyor Corp., Hammond, Ind.  
 Smith Eng. Wks., Milwaukee, Wis.  
 Sprout, Waldron & Co., Muncy, Penna.  
 Stearns Mfg. Co., Inc., Adrian, Mich.  
 Stephens - Adamson Mfg. Co., Aurora, Ill.  
 Universal Road Mch. Co., Kingston, N. Y.  
 Webster Mfg. Co., Inc., Tiffin, O.

**BELT DRESSING**  
 Cling-Surface Co., Buffalo, N. Y.

**BELT FASTENERS**  
 Armstrong-Bray & Co., Chicago, Ill.  
 Earle C. Bacon, Inc., New York, N. Y.  
 Bristol Co., Waterbury, Conn.  
 Chicago Belting Co., Chicago, Ill.  
 Crescent Belt Fastener Co., New York, N. Y.  
 Detroit Belt Lacer Co., Detroit, Mich.  
 Flexible Steel Lacing Co., Chicago, Ill.  
 Link-Belt Co., Chicago, Ill.  
 Mannheim Mfg. & Belting Co., Mannheim, Penna.  
 The Mine and Smelter Supply Co., Denver, Colo.  
 Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
 Portable Mch. Div., A. B. Farquhar Co., York, Penna.  
 W. O. & M. W. Talcott, Inc., Providence, R. I.  
 Victor Balata & Textile Belting Co., Chicago, Ill.

**BELT TIGHTENERS**  
 Continental Gin Co., Birmingham, Ala.  
 Dodge Mfg. Co., Mishawaka, Ind.  
 The Jeffrey Mfg. Co., Columbus, O.  
 Link-Belt Co., Chicago, Ill.  
 Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
 Robins Conveying Belt Co., Passaic, N. J.  
 F. L. Smith & Co., New York, N. Y.  
 Stephens - Adamson Mfg. Co., Aurora, Ill.  
 Webster Mfg. Co., Inc., Tiffin, O.  
 T. B. Wood's Sons Co., Chambersburg, Penna.

**BELTING (Chain)**  
 American Manganese Div., Chicago Heights, Ill.  
 Earle C. Bacon, Inc., New York, N. Y.  
 Chain Belt Co., Milwaukee, Wis.  
 Continental Gin Co., Birmingham, Ala.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 Godfrey Conveyor Co., Elkhart, Ind.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.  
 Link-Belt Co., Indianapolis, Ind.  
 Stephens - Adamson Mfg. Co., Aurora, Ill.  
 Taylor-Wharton Iron & Steel Co., High Bridge, N. J.  
 Webster Mfg. Co., Inc., Tiffin, O.

**BELTING (Conveyor & Elevator)**  
 Earle C. Bacon, Inc., New York, N. Y.  
 Barber-Greene Co., Aurora, Ill.  
 Boston Woven Hose & Rubber Co., Boston, Mass.  
 Cincinnati Rubber Mfg. Co., Cincinnati, O.  
 The Columbus Conveyor Co., Columbus, O.  
 Continental Gin Co., Birmingham, Ala.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 Fairfield Eng. Co., Marion, O.  
 Godfrey Conveyor Co., Elkhart, Ind.  
 Goodall Rubber Co., Philadelphia, Penna.  
 B. F. Goodrich Co., Akron, O.  
 Goodyear Tire & Rubber Co., Akron, O.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.  
 George Haiss Mfg. Co., New York, N. Y.  
 Hewitt Rubber Corp., Buffalo, N. Y.  
 Iowa Mfg. Co., Cedar Rapids, Ia.  
 Jackson & Church Co., Saginaw, Mich.  
 The Jeffrey Mfg. Co., Columbus, O.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Link-Belt Co., Chicago, Ill.  
 The Manhattan Rubber Mfg. Div., Passaic, N. J.  
 Mannheim Mfg. & Belting Co., Mannheim, Penna.  
 Mine & Smelter Supply Co., Denver, Colo.  
 New York Belting & Packing Co., New York, N. Y.  
 Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
 Pioneer Rubber Mills, San Francisco, Calif.  
 Quaker Rubber Corp., Philadelphia, Penna.

Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown, O.  
 Robins Conveying Belt Co., Passaic, N. J.  
 Smith Eng. Wks., Milwaukee, Wis.  
 Stephens - Adamson Mfg. Co., Aurora, Ill.  
 Thermoid Rubber Co., Trenton, N. J.  
 United States Rubber Co., New York, N. Y.  
 Victor Balata & Textile Belting Co., Chicago, Ill.

**BELTING (Metal)**  
 Link-Belt Co., Indianapolis, Ind.  
 Manganese Steel Forge Co., Philadelphia, Penna.  
 National Steel Prod. Co., Kansas City, Mo.  
 Sandvik Steel, Inc., New York, N. Y.  
 Superior Metal Prod. Co., Inc., Marion, Ind.  
 Wickwire Spencer Steel Co., New York, N. Y.

**BELTING (V-Type)**  
 Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
 Earle C. Bacon, Inc., New York, N. Y.  
 Browning Mfg. Co., Inc., Maysville, Ky.  
 Chicago Belting Co., Chicago, Ill.  
 Cincinnati Rubber Mfg. Co., Cincinnati, O.  
 Continental Gin Co., Birmingham, Ala.  
 Dayton Rubber Mfg. Co., Dayton, O.  
 Gates Rubber Co., Denver, Colo.  
 L. H. Gilmer Co., Philadelphia, Penna.  
 Goodall Rubber Co., Inc., Philadelphia, Penna.  
 B. F. Goodrich Co., Akron, O.  
 Goodyear Tire & Rubber Co., Akron, O.  
 W. A. Jones Foundry & Mach. Co., Chicago, Ill.  
 Manhattan Rubber Mfg. Div., Passaic, N. J.  
 Mannheim Mfg. & Belting Co., Mannheim, Penna.  
 Meekum Eng., Inc., Chicago, Ill.  
 Republic Rubber Co., Youngstown, O.  
 Rickwood Mfg. Co., Indianapolis, Ind.  
 Thermoid Rubber Co., Trenton, N. J.  
 United States Rubber Co., New York, N. Y.  
 H. W. Weiner Co., Milwaukee, Wis.  
 Western Mch. Co., San Francisco, Calif.

**BELTING (Wire)**  
 Buffalo Wire Wks. Co., Inc., Buffalo, N. Y.  
 Manganese Steel Forge Co., Philadelphia, Penna.  
 Wickwire Spencer Steel Co., New York, N. Y.

**BIN GATES**  
 Alpha Tank & Sheet Metal Mfg. Co., St. Louis, Mo.  
 Anchor Concrete Mch. Co., Columbus, O.  
 Atlas Car & Mfg. Co., Cleveland, O.  
 Earle C. Bacon, Inc., New York, N. Y.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Beaumont Birch Co., Philadelphia, Penna.  
 Bodinson Mfg. Co., San Francisco, Calif.  
 Butler Bin Co., Waukesha, Wis.  
 Chain Belt Co., Milwaukee, Wis.  
 Continental Gin Co., Birmingham, Ala.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 Denver Equip. Co., Denver, Colo.  
 Eagle Iron Wks., Des Moines, Ia.  
 Erie Steel Construction Co., Erie, Penna.  
 Fairfield Eng. Co., Marion, O.  
 Fuller Co., Catsaunqua, Penna.  
 Godfrey Conveyor Co., Elkhart, Ind.  
 Greenville Mfg. Wks., Greenville, O.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.  
 George Haiss Mfg. Co., New York, N. Y.  
 Heltzel Steel Form & Iron Co., Warren, O.  
 Industrial Brownhoist Corp., Bay City, Mich.  
 Iowa Mfg. Co., Cedar Rapids, Ia.  
 The Jeffrey Mfg. Co., Columbus, O.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Lancaster Iron Wks., Inc., Lancaster, Penna.  
 Link-Belt Co., Chicago, Ill.  
 McLanahan & Stone Corp., Hollidaysburg, Penna.  
 Miles Mfg. Co., Jackson, Mich.  
 Mine & Smelter Supply Co., Denver, Colo.

National Steel Prod. Co., Kansas City, Mo.  
 The Neff & Fry Co., Camden, O.  
 Ransome Concrete Mch. Co., Dunellen, N. J.  
 Smith Eng. Wks., Milwaukee, Wis.  
 Sprout, Waldron & Co., Muncy, Penna.  
 Stearns Mfg. Co., Inc., Adrian, Mich.  
 Stephens - Adamson Mfg. Co., Aurora, Ill.  
 Straub Mfg. Co., Oakland, Calif.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 Universal Road Mch. Co., Kingston, N. Y.  
 Webster Mfg. Co., Inc., Tiffin, O.  
 Western Mch. Co., San Francisco, Calif.

**BIN LEVEL INDICATORS**  
 Babcock & Wilcox Co., New York, N. Y.  
 Bin-Dicator Co., Detroit, Mich.  
 Fuller Co., Catsaunqua, Penna.  
 National Steel Prod. Co., Kansas City, Mo.  
 Simplicity System Co., Chattanooga, Tenn.  
 F. L. Smith & Co., New York, N. Y.  
 Stephens - Adamson Mfg. Co., Aurora, Ill.  
 Webster Mfg. Co., Inc., Tiffin, O.  
 Westinghouse Electric & Mfg. Co., E. Pittsburgh, Penna.

**BINS (Storage)**  
 Alpha Tank & Sheet Metal Mfg. Co., St. Louis, Mo.  
 Anchor Concrete Mch. Co., Columbus, O.  
 Atlas Car & Mfg. Co., Cleveland, O.  
 Austin-Western Road Mch. Co., Aurora, Ill.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Beaumont Birch Co., Philadelphia, Penna.  
 Bethlehem Steel Co., Bethlehem, Penna.  
 Blaw-Knox Co., Blawnox, Penna.  
 Rodinson Mfg. Co., San Francisco, Calif.  
 Burrell Eng. & Construction Co., Chicago, Ill.  
 Butler Bin Co., Waukesha, Wis.  
 Construction Mch. Co., Waterloo, Ia.  
 Continental Gin Co., Birmingham, Ala.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 Diamond Iron Wks., Inc., Minneapolis, Minn.  
 Eagle Iron Wks., Des Moines, Ia.  
 Erie Steel Construction Co., Erie, Penna.  
 Garlinghouse Bros., Los Angeles, Calif.  
 Godfrey Conveyor Co., Elkhart, Ind.  
 Greenville Mfg. Wks., Greenville, O.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.  
 Heltzel Steel Form & Iron Co., Warren, O.  
 Hetherington & Berner, Inc., Indianapolis, Ind.  
 Iowa Mfg. Co., Cedar Rapids, Ia.  
 Jackson & Church Co., Saginaw, Mich.  
 The Jeffrey Mfg. Co., Columbus, O.  
 C. S. Johnson Co., Champaign, Ill.  
 Lancaster Iron Wks., Inc., Lancaster, Penna.  
 Link-Belt Co., Chicago, Ill.  
 Long, M. A. Co., Baltimore, Md.  
 MacDonald Eng. Co., Chicago, Ill.  
 Manitowoc Eng. Wks., Manitowoc, Wis.  
 Marietta Concrete Corp., Marietta, O.  
 Multiplex Concrete Mch. Co., Elmore, O.  
 Neff & Fry Co., Camden, O.  
 The Nicholson Co., Inc., New York, N. Y.  
 Parsons Eng. Corp., Cleveland, O.  
 Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
 Ransome Concrete Mch. Co., Dunellen, N. J.  
 Rogers Iron Wks. Co., Joplin, Mo.  
 Smith Eng. Wks., Milwaukee, Wis.  
 Stephens - Adamson Mfg. Co., Aurora, Ill.  
 Sturtevant Mill Co., Dorchester, Mass.  
 Superior Metal Prod. Co., Marion, Ind.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 Universal Eng. Corp., Cedar Rapids, Ia.  
 Universal Road Mch. Co., Kingston, N. Y.  
 Webster Mfg. Co., Inc., Tiffin, O.

**BITS (Drill)**  
 Bucyrus-Erie Co., S. Milwaukee, Wis.  
 Chicago Pneumatic Tool Co., New York, N. Y.  
 Cleveland Rock Drill Co., Cleveland, O.

# DIRECTORY

Independent Pneumatic Tool Co., Chicago, Ill.  
**Ingersoll-Rand Co.**, New York, N. Y.  
**The Jeffrey Mfg. Co.**, Columbus, O.  
**The Mine & Smelter Supply Co.**, Denver, Colo.  
 Sanderson Cyclone Drill Co., Orrville, O.  
 The Star Drilling Mach. Co., Akron, O.  
**Timken Boiler Bearing Co.**, Canton, O.  
 Western Mch. Co., San Francisco, Calif.

## BLASTING CAPS

**American Cyanamid & Chem. Corp.**, New York, N. Y.  
 Atlas Powder Co., Wilmington, Del.  
**E. I. du Pont de Nemours & Co.**, Wilmington, Del.  
**Hercules Powder Co.**, Wilmington, Del.  
 Illinois Powder Mfg. Co., St. Louis, Mo.  
 National Powder Co., Eldred, Penna.  
 Trojan Powder Co., Allentown, Penna.

## BLASTING MACHINES

**American Cyanamid & Chem. Corp.**, New York, N. Y.  
 Atlas Powder Co., Wilmington, Del.  
**E. I. du Pont de Nemours & Co.**, Wilmington, Del.  
**Hercules Powder Co.**, Wilmington, Del.  
 Illinois Powder Mfg. Co., St. Louis, Mo.  
 National Powder Co., Eldred, Penna.  
 Trojan Powder Co., Allentown, Penna.

## BLASTING SUPPLIES

**American Cyanamid & Chem. Corp.**, New York, N. Y.  
 Atlas Powder Co., Wilmington, Del.  
**E. I. du Pont de Nemours & Co.**, Wilmington, Del.  
**Ensign-Bickford Co.**, Simsbury, Conn.  
**Hercules Powder Co.**, Wilmington, Del.  
 Illinois Powder Mfg. Co., St. Louis, Mo.  
 Independent Explosives Co., Cleveland, O.  
 National Powder Co., Eldred, Penna.  
 Trojan Powder Co., Allentown, Penna.

## BLOCK MACHINES, BUILDING (Concrete)

**Anchor Concrete Mch. Co.**, Columbus, O.  
 Bay City Cast Stone Block Mch. Co., Bay City, Mich.  
**Besser Mfg. Co.**, Alpena, Mich.  
 Blystone Mfg. Co., Cambridge Springs, Penna.  
 Concrete Equip. Co., Holland, Mich.  
**Concrete Transport Mixer Co.**, St. Louis, Mo.  
**W. E. Dunn Mfg. Co.**, Holland, Mich.  
 Essick Mch. Co., Los Angeles, Calif.  
 Foote, J. B. Foundry Co., Fredericktown, O.  
**Jackson & Church Co.**, Saginaw, Mich.  
**The Kent Mach. Co.**, Cuyahoga Falls, O.  
 Miles Mfg. Co., Jackson, Mich.  
 Mortarless Tile Mach. Co., Inc., Los Angeles, Calif.  
**Multiplex Concrete Mch. Co.**, Elmore, O.  
 Sill & Rawlings Concrete Block Co., Tonganoxie, Kan.  
**Stearns Mfg. Co., Inc.**, Adrian, Mich.  
 The Unge Exporters, Topeka, Kan.

## BLOCKS (Sheave)

**American Holst & Derrick Co.**, St. Paul, Minn.  
**American Manganese Steel Div.**, Chicago, Ill.  
**Earle C. Bacon, Inc.**, New York, N. Y.  
 Clyde Iron Wks., Inc., Duluth, Minn.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 Dobbie Foundry & Mach. Co., Niagara Falls, N. Y.  
 Dodge Mfg. Corp., Mishawaka, Ind.  
 Garlinghouse Bros., Los Angeles, Calif.  
**George Haiss Mfg. Co.**, New York, N. Y.  
**The Jeffrey Mfg. Co.**, Columbus, O.  
**McLanahan & Stone Corp.**, Hollidaysburg, Penna.  
**Mine & Smelter Supply Co.**, Denver, Colo.  
 Rogers Iron Wks. Co., Joplin, Mo.  
 Sauerman Bros., Inc., Chicago, Ill.

The Simplicity System Co., Chattanooga, Tenn.  
 Sprout, Waldron & Co., Muncy, Penna.  
**Stephens-Adamson Mfg. Co.**, Aurora, Ill.  
 Webster Mfg. Co., Tiffin, O.  
 Wisconsin Foundry & Mach. Co., Madison, Wis.

## LOW TORCHES, Heaters, Thawing Outfits for Frozen Aggregates

Aeroll Burner Co., Inc., West New York, N. J.  
**Diamond Iron Wks., Inc.**, Minneapolis, Minn.  
 Littleford Bros., Inc., Cincinnati, O.  
 Macleod Co., Cincinnati, O.  
 Marvel Equip. Mfg. Co., Chicago, Ill.  
 Torch Weld Equip. Co., Chicago, Ill.  
 White Mfg. Co., Elkhart, Ind.

## BLOWERS (See Fans and Blowers)

**BOATS (Derrick)**  
 American Steel Dredge Co., Inc., Fort Wayne, Ind.  
**Bethlehem Steel Co.**, Bethlehem, Penna.  
**Manitowoc Eng. Wks.**, Manitowoc, Wis.

## BOATS (Self-Unloading)

**Manitowoc Eng. Wks.**, Manitowoc, Wis.  
 Meckum Eng., Inc., Chicago, Ill.  
**Robins Conveying Belt Co.**, Passaic, N. J.  
 Smith, Leatham D., Dock Co., Chicago, Ill.

## BODIES (Concrete Mixer Truck)

**Blaw-Knox Co.**, Blawnox, Penna.  
**Chain Belt Co.**, Milwaukee, Wis.  
**Concrete Transport Mixer Co.**, St. Louis, Mo.  
**Jaeger Mach. Co.**, Columbus, O.  
 National Steel Prod. Co., Kansas City, Mo.  
 Ransome Concrete Mach. Co., Dunellen, N. J.  
**T. L. Smith Co.**, Milwaukee, Wis.

## BODIES (Dump)

**Brooks Equip. & Mfg. Co.**, Knoxville, Tenn.  
 Burch Corp., Crestline, O.  
 Gallion Allsteel Body Co., Gallion, O.  
 Hell Co., Milwaukee, Wis.  
 Hug Co., Highland, Ill.  
**McLanahan & Stone Corp.**, Hollidaysburg, Penna.  
 National Steel Prod. Co., Kansas City, Mo.  
 Superior Metal Prod. Co., Inc., Marion, Ind.  
 Truck Equip. Co., Buffalo, N. Y.

## BODIES (Dump Truck)

Athey Truss Wheel Co., Chicago, Ill.  
 Burch Corp., Crestline, O.  
**Commercial Shearing & Stamping Co.**, Youngstown, O.  
**Dempster Bros.**, Knoxville, Tenn.  
 Dodge Motor Co., Detroit, Mich.  
**Easton Car and Construction Co.**, New York, N. Y.  
 Ford Motor Co., Dearborn, Mich.  
 Gallion Allsteel Body Co., Gallion, O.  
 Gar Wood Industries, Inc., Detroit, Mich.  
 General Motors Truck Co., Detroit, Mich.  
 Hell Co., Milwaukee, Wis.  
 Hug Co., Highland, Ill.  
 National Steel Prod. Co., Kansas City, Mo.  
 Superior Body Co., Inc., Marion, Ind.  
 Superior Metal Prod. Co., Inc., Marion, Ind.  
 Truck Equip. Co., Inc., Buffalo, N. Y.

## BODIES (Trailer)

**Easton Car & Construction Co.**, New York, N. Y.  
 National Steel Prod. Co., Kansas City, Mo.  
 Truck Equip. Co., Inc., Buffalo, N. Y.

## BOILERS

**Babcock & Wilcox Co.**, New York, N. Y.  
**Combustion Eng. Corp.**, Chicago, Ill.  
**Jackson & Church Co.**, Saginaw, Mich.  
**Keystone Driller Co.**, Beaver Falls, Penna.  
**The Mine & Smelter Supply Co.**, Denver, Colo.  
 Orr & Sembower, Inc., Reading, Penna.  
 Straub Mfg. Co., Oakland, Calif.  
 Union Iron Wks., Erie, Penna.

## POILERS (Waste Heat)

**Babcock & Wilcox Co.**, New York, N. Y.  
**Mine & Smelter Supply Co.**, Denver, Colo.

## BRICK MACHINES & MOLDS

(Concrete, Sand-Lime)  
**Anchor Concrete Mch. Co.**, Columbus, O.  
**Besser Mfg. Co.**, Alpena, Mich.  
 Concrete Equip. Co., Holland, Mich.  
**Concrete Transport Mixer Co.**, St. Louis, Mo.  
**W. E. Dunn Mfg. Co.**, Holland, Mich.  
**Jackson & Church Co.**, Saginaw, Mich.  
**The Kent Mach. Co.**, Cuyahoga Falls, O.  
 Mortarless Tile Mach. Co., Inc., Los Angeles, Calif.  
**Multiplex Concrete Mach. Co.**, Elmore, O.  
**Stearns Mfg. Co., Inc.**, Adrian, Mich.

## BRIQUETTE MOLDS (See Laboratory Equipment)

## BUCKET PARTS

**American Manganese Steel Div.**, Chicago Heights, Ill.  
**Frog, Switch & Mfg. Co.**, Carlisle, Penna.  
**Kensington Steel Co.**, Chicago, Ill.  
**Manganese Steel Forge Co.**, Philadelphia, Penna.  
**Taylor-Wharton Iron & Steel Co.**, High Bridge, N. J.

## BUCKETS (Clamshell, Grab & Orange-Peel)

**Austin-Western Road Mch. Co.**, Aurora, Ill.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
**Blaw-Knox Co.**, Blawnox, Penna.  
**Erie Steel Construction Co.**, Erie, Penna.  
**George Haiss Mfg. Co.**, New York, N. Y.  
 Hanson Excavator Wks., Tiffin, O.  
**Harnischfeger Corp.**, Milwaukee, Wis.  
**Hayward Co.**, New York, N. Y.  
**Industrial Brownhoist Corp.**, Bay City, Mich.  
 Joseph F. Kiesler Co., Chicago, Ill.  
**Owen Bucket Co.**, Cleveland, O.  
 Pettibone-Muliken Corp., Chicago, Ill.  
**Robins Conveying Belt Co.**, Passaic, N. J.  
**Wellman Eng. Co.**, Cleveland, O.  
 Western Mch. Co., San Francisco, Calif.

## BUCKETS (Dragline & Slackline)

**Austin-Western Road Mch. Co.**, Aurora, Ill.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Bay City Shovels, Inc., Bay City, Mich.  
 Beaumont Birch Co., Philadelphia, Penna.  
**Blaw-Knox Co.**, Blawnox, Penna.  
**Bucyrus-Erie Co.**, S. Milwaukee, Wis.  
**Erie Steel Construction Co.**, Erie, Penna.  
 Godfrey Conveyor Co., Elkhart, Ind.  
 Hanson Excavator Wks., Tiffin, O.  
**Harnischfeger Corp.**, Milwaukee, Wis.  
**Hayward Co.**, New York, N. Y.  
 Inley Mfg. Corp., Indianapolis, Ind.  
**Northwest Eng. Co.**, Chicago, Ill.  
**Owen Bucket Co.**, Cleveland, O.  
**Page Eng. Co.**, Chicago, Ill.  
**Robins Conveying Belt Co.**, Passaic, N. J.  
**Sauerman Bros., Inc.**, Chicago, Ill.  
**Taylor-Wharton Iron & Steel Co.**, High Bridge, N. J.  
**Wellman Eng. Co.**, Cleveland, O.  
 Western Mch. Co., San Francisco, Calif.  
 Wisconsin Foundry & Mach. Co., Madison, Wis.

## BUCKETS (Dredge & Excavator)

**American Manganese Steel Div.**, Chicago Heights, Ill.  
**Blaw-Knox Co.**, Blawnox, Penna.  
**Bucyrus-Erie Co.**, S. Milwaukee, Wis.  
**Frog, Switch & Mfg. Co.**, Carlisle, Penna.  
**George Haiss Mfg. Co.**, New York, N. Y.  
**Hayward Co.**, New York, N. Y.  
**Link-Belt Co.**, Chicago, Ill.  
 Meckum Eng., Inc., Chicago, Ill.  
**Owen Bucket Co.**, Cleveland, O.  
**Taylor-Wharton Iron & Steel Co.**, High Bridge, N. J.  
**Wellman Eng. Co.**, Cleveland, O.  
 Western Mch. Co., San Francisco, Calif.

## BUCKETS (Elevator)

**Alpha Tank & Sheet Metal Mfg. Co.**, St. Louis, Mo.  
**American Manganese Steel Div.**, Chicago Heights, Ill.  
**Austin-Western Road Mch. Co.**, Aurora, Ill.  
**Earle C. Bacon, Inc.**, New York, N. Y.

## Barber Greene Co., Aurora, Ill.

C. O. Bartlett & Snow Co., Cleveland, O.  
 Beaumont Birch Co., Philadelphia, Penna.  
 Bodinson Mfg. Co., San Francisco, Calif.  
 L. Burnmaster Co., Milwaukee, Wis.  
**Chain Belt Co.**, Milwaukee, Wis.  
**Chicago Perforating Co.**, Chicago, Ill.  
 The Columbus Conveyor Co., Columbus, O.  
**Continental Gin Co.**, Birmingham, Ala.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 Eagle Crusher Co., Inc., Gallion, O.  
 Fairfield Eng. Co., Marion, O.  
 Farrell-Cheek Steel Co., Sandusky, O.  
 Godfrey Conveyor Co., Elkhart, Ind.  
 Greenville Mfg. Wks., Greenville, O.  
**Grundler Crusher & Pulverizer Co.**, St. Louis, Mo.  
 B. F. Gump Co., Chicago, Ill.  
**George Haiss Mfg. Co.**, New York, N. Y.  
**Hendrick Mfg. Co.**, Carbondale, Penna.  
 Huron Industries, Inc., Alpena, Mich.  
**Industrial Brownhoist Corp.**, Bay City, Mich.  
 Inley Mfg. Corp., Indianapolis, Ind.

## Iowa Mfg. Co., Cedar Rapids, Ia.

**The Jeffrey Mfg. Co.**, Columbus, O.  
 Kennedy-Van Saun Mfg. Corp., New York, N. Y.  
 Lewistown Foundry & Mach. Co., Lewistown, Penna.  
**Link-Belt Co.**, Chicago, Ill.  
**McLanahan & Stone Corp.**, Hollidaysburg, Penna.  
 Manganese Steel Forge Co., Philadelphia, Penna.  
**Mine & Smelter Supply Co.**, Denver, Colo.  
 National Steel Products Co., Kansas City, Mo.  
 National Malleable & Steel Castings Co., Cleveland, O.  
 Palmer-Bee Co., Detroit, Mich.  
 Pettibone-Muliken Corp., Chicago, Ill.

## Pioneer Engineering Wks., Inc., Minneapolis, Minn.

**Ransome Concrete Mach. Co.**, Dunellen, N. J.  
**Robins Conveying Belt Co.**, Passaic, N. J.  
 Screw Conveyor Corp., Hammond, Ind.  
 Simplicity System Co., Chattanooga, Tenn.  
 Sprout, Waldron & Co., Muncy, Penna.  
 Standard Metal Mfg. Co., Malinta, O.  
**Stephens-Adamson Mfg. Co.**, Aurora, Ill.  
**Taylor-Wharton Iron & Steel Co.**, High Bridge, N. J.  
**Traylor Engineering & Mfg. Co.**, Allentown, Penna.  
**Universal Road Mach. Co.**, Kingston, N. Y.  
 Webster Mfg., Inc., Tiffin, O.  
 Western Machy. Co., San Francisco, Calif.  
 Wisconsin Foundry & Mach. Co., Madison, Wis.

## BUILDING (Block) TILE MACHINES

**Anchor Concrete Machy. Co.**, Columbus, O.  
**Besser Mfg. Co.**, Alpena, Mich.  
 Blystone Mfg. Co., Cambridge Springs, Penna.  
 Concrete Equip. Co., Holland, Mich.  
**W. E. Dunn Mfg. Co.**, Holland, Mich.  
 Foote, J. B. Foundry Co., Fredericktown, O.  
**Jackson & Church Co.**, Saginaw, Mich.  
**The Kent Machine Co.**, Cuyahoga Falls, O.  
 Miles Mfg. Co., Jackson, Mich.  
 Mortarless Tile Mach. Co., Inc., Los Angeles, Calif.  
**Multiplex Concrete Machy. Co.**, Elmore, O.  
**Stearns Mfg. Co., Inc.**, Adrian, Mich.

## BULK CEMENT HANDLING MACHINERY

Beaumont Birch Co., Philadelphia, Penna.  
 Bodinson Mfg. Co., San Francisco, Calif.  
**Butler Bin Co.**, Waukesha, Wis.  
 The Columbus Conveyor Co., Columbus, O.  
 Conveyor Co., Inc., Los Angeles, Calif.  
**Fuller Co.**, Catasauqua, Penna.  
 Garlinghouse Bros., Los Angeles, Calif.

Godfrey Conveyor Co., Elkhart, Ind.  
**Heltzel Steel Form & Iron Co., Warren, O.**  
 Highway Equip. Co., Inc., Cedar Rapids, Ia.  
 The Jeffrey Mfg. Co., Columbus, O.  
 Robins Conveying Belt Co., Passaic, N. J.  
 Screw Conveyor Corp., Hammond, Ind.  
 F. L. Smith & Co., New York, N. Y.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.  
 Webster Mfg., Inc., Tiffin, O.

**BULK CEMENT STORAGE PLANTS**

Blaw-Knox Co., Blawnox, Penna.  
 Bodinson Mfg. Co., San Francisco, Calif.  
 Butler Bin Co., Waukesha, Wis.  
 The Columbus Conveyor Co., Columbus, O.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 Garlinghouse Bros., Los Angeles, Calif.  
**Heltzel Steel Form & Iron Co., Warren, O.**  
 The Neff and Fry Co., Camden, O.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.

**BULLDOZERS**

Baker Mfg. Co., Springfield, Ill.  
 Blaw-Knox Co., Blawnox, Penna.  
 Buckeye Traction Ditcher Co., Findlay, O.  
 Bucyrus-Erie Co., S. Milwaukee, Wis.  
 Gar Wood Industries, Inc., Detroit, Mich.  
 Heil Co., Milwaukee, Wis.  
 La. Plant-Choteau Mfg. Co., Inc., Cedar Rapids, Ia.  
 R. G. LeTourneau, Inc., Peoria, Ill.

**BURIAL VAULT FORMS (Concrete)**

American Vault Wks., Inc., Forest Park, Ill.  
 Ashland Vault Co., Ashland, O.  
 Automatic Sealing Vault Co., Peru, Ind.  
 Berg Vault Co., St. Louis, Mo.  
 Dowell & Kover, Ft. Wayne, Ind.  
 Wilbert W. Haase Co., Inc., Forest Park, Ill.  
 Lasting Products Co., Baltimore, Md.  
 Mead-Suydam Co., Orange, N. J.  
 Norwalk Vault Co., Norwalk, O.  
 Safety Vault Corp., Cleveland, O.  
 Sterling Concrete Vault Co., Chicago, Ill.  
 William Whitted, Escondido, Calif.

**BURNERS (Kiln)**

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
 Babcock & Wilcox Co., New York, N. Y.  
 The Mine & Smelter Supply Co., Denver, Colo.  
 F. L. Smith & Co., New York, N. Y.

**CABLE EXCAVATORS**

American Hoist & Derrick Co., St. Paul, Minn.  
 Beaumont Birch Co., Philadelphia, Penna.  
 Bucyrus-Erie Co., S. Milwaukee, Wis.  
 Godfrey Conveyor Co., Elkhart, Ind.  
 Sauerman Bros., Inc., Chicago, Ill.

**CABLEWAYS**

American Chain & Cable Co., Inc., Bridgeport, Conn.  
 Blaw-Knox Co., Blawnox, Penna.  
 Clyde Iron Wks., Inc., Duluth, Minn.  
 Columbus Steel Co., San Francisco, Calif. (U. S. Steel Corp. Sub.)  
 Godfrey Conveyor Co., Elkhart, Ind.  
 Hazard Wire Rope Co., Wilkes Barre, Penna.  
 Interstate Equip. Corp., Elizabeth, N. J.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Robins Conveying Belt Co., Passaic, N. J.  
 John A. Roebbling's Sons Co., Trenton, N. J.  
 Sauerman Bros., Inc., Chicago, Ill.  
 Wickwire Spencer Steel Co., New York, N. Y.

**CALCINING EQUIPMENT (Cement, Lime, Gypsum, etc.)**

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
 Atlas Car & Mfg. Co., Cleveland, O.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Blaw-Knox Co., Blawnox, Penna.  
 Bonnet Co., Canton, O.  
 L. R. Christie Co., New York, N. Y.  
 J. B. Ehrsam Son Mfg. Co., Enterprise, Kans.  
 Ellerman Co., Salt Lake City, Utah.  
 A. P. Green Fire Brick Co., Mexico, Mo.

Hardinge Co., Inc., York, Penna.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 The Loomis Mach. Co., Tiffin, O.  
 Manitowoc Eng. Wks., Manitowoc, Wis.  
 Raymond Pulverizer Co., Chicago, Ill.  
 Ruggles-Coles Eng. Co., New York, N. Y.  
 F. L. Smith & Co., New York, N. Y.  
 Sprout, Waldron & Co., Muncy, Penna.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 Vulcan Iron Wks., Wilkes-Barre, Penna.  
 Western Mch. Co., San Francisco, Calif.

**CALCIUM CHLORIDE**

Calcium Chloride Ass'n, Detroit, Mich.  
 Columbia Alkali Corp., Barberton, O. (Div. of Pittsburgh Plate Glass)  
 Dow Chem. Co., Midland, Mich.  
 E. I. du Pont de Nemours & Co., Wilmington, Dela.  
 Harshaw Chem. Co., Cleveland, O.  
 Michigan Alkali Corp., Detroit, Mich.  
 Pittsburgh Plate Glass Co., Columbia Chem. Div., Pittsburgh, Penna.  
 Solvay Sales Corp., New York, N. Y.

**CAPS BLASTING (See Blasting Caps)**

**CAR MOVERS**

Advance Car Mover, Inc., Appleton, Wis.  
 American Hoist & Derrick Co., St. Paul, Minn.  
 Appleton-Atlas Mover Corp., Milwaukee, Wis.  
 Atlas Car & Mfg. Co., Cleveland, O.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Boyer-Campbell Co., Detroit, Mich.  
 Clyde Iron Wks., Inc., Duluth, Minn.  
 Dake Engine Co., Grand Haven, Mich.  
 Diamond Iron Wks., Inc., Minneapolis, Minn.  
 Dobbie Foundry & Mach. Co., Niagara Falls, N. Y.  
 L. B. Foster Co., Pittsburgh, Penna.  
 Fridy Hoist & Mch. Co., Mountville, Penna.  
 Godfrey Conveyor Co., Elkhart, Ind.

The Jeffrey Mfg. Co., Columbus, O.  
 Link-Belt Co., Chicago, Ill.  
 Ottumwa Iron Wks., Ottumwa, Ia.  
 Pulmosan Safety Equip. Corp., Brooklyn, N. Y.  
 Robins Conveying Belt Co., Passaic, N. J.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.  
 Sullivan Mch. Co., Michigan City, Ind.  
 Webster Mfg., Inc., Tiffin, O.

**CARS (Dump)**

Austin-Western Road Mch. Co., Aurora, Ill.  
 Beaumont Birch Co., Philadelphia, Penna.  
 The Chase Foundry & Mfg. Co., Columbus, O.  
 Differential Steel Car Co., Findlay, O.  
 Mine & Smelter Supply Co., Denver, Colo.  
 National Steel Prod. Co., Kansas City, Mo.  
 Ottumwa Iron Wks., Ottumwa, Ia.  
 Pressed Steel Car Co., Inc., Industrial Div., Pittsburgh, Penna.  
 Sanford-Day Iron Wks., Inc., Knoxville, Tenn.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 Watt Car & Wheel Co., Barnesville, O.

**CARS (Mine, Quarry and Industrial)**

Atlas Car & Mfg. Co., Cleveland, O.  
 Austin-Western Road Mch. Co., Aurora, Ill.  
 Earle C. Bacon, Inc., New York, N. Y.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Bethlehem Steel Co., Bethlehem, Penna.  
 Carnegie-Illinois Corp., Pittsburgh, Penna.  
 The Chase Foundry & Mfg. Co., Columbus, O.  
 Columbus Steel Co., San Francisco, Calif. (U. S. Steel Corp. Sub.)  
 Denver Equip. Co., Denver, Colo.  
 Differential Steel Car Co., Findlay, O.  
 Eagle Iron Wks., Des Moines, Ia.  
 Easton Car and Construction Co., New York, N. Y.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.

Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Miles Mfg. Co., Jackson, Mich.  
 Mine & Smelter Supply Co., Denver, Colo.  
 National Malleable & Steel Castings Co., Cleveland, O.  
 National Steel Products Co., Kansas City, Mo.  
 Ottumwa Iron Wks., Ottumwa, Ia.  
 Pressed Steel Car Co., Inc., Industrial Div., Pittsburgh, Penna.  
 Rogers Iron Wks. Co., Joplin, Mo.  
 Sanford-Day Iron Wks., Inc., Knoxville, Tenn.  
 Stearns Mfg. Co., Inc., Adrian, Mich.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 Watt Car & Wheel Co., Barnesville, O.  
 Western Mch. Co., San Francisco, Calif.  
 Wisconsin Foundry & Mach. Co., Madison, Wis.

**CARTS, POWER (Concrete)**

Mixermobile Co., Inc., Los Angeles, Calif.  
**ASTINGS (Repair Parts)**  
 Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
 Alloy Cast Steel Co., Marion, O.  
 American Manganese Steel Div., Chicago Heights, Ill.  
 Babcock & Wilcox Co., New York, N. Y.  
 Earle C. Bacon, Inc., New York, N. Y.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Birdsboro Steel Foundry & Mach. Co., Birdsboro, Penna.  
 Blaw-Knox Co., Blawnox, Penna.  
 C. G. Buchanan Co., Inc., New York, N. Y.  
 Burch Corp., Crestline, O.  
 Commercial Steel Casting Co., Marion, O.  
 Continental Gin Co., Birmingham, Ala.  
 Continental Motors Corp., Detroit, Mich.  
 Dake Engine Co., Grand Haven, Mich.  
 Dobbie Foundry & Mach. Co., Niagara Falls, N. Y.  
 The Duraloy Co., Scottsdale, Penna.  
 Eagle Iron Wks., Des Moines, Ia.  
 Erie Steel Foundry Co., Portland, Ore.  
 Farrell-Cheek Steel Co., Sandusky, O.

Hardinge Co., Inc., York, Penna.  
 Heising Steelite Co., Kokomo, Ind.  
 Hetherington & Berner, Inc., Indianapolis, Ind.  
 Robert Holmes & Bros., Inc., Danville, Ill.  
 Huron Industries, Inc., Alpena, Mich.  
 Jackson & Church Co., Saginaw, Mich.  
 The Jeffrey Mfg. Co., Columbus, O.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Kensington Steel Co., Chicago, Ill.  
 Lancaster Iron Wks., Inc., Lancaster, Penna.  
 Link-Belt Co., Indianapolis, Ind.  
 McLanahan & Stone Corp., Hollidaysburg, Penna.  
 The Mine & Smelter Supply Co., Denver, Colo.  
 Morris Mach. Wks., Baldwinville, N. Y.  
 Multiplex Concrete Mch. Co., Elmore, O.  
 National Bearing Metals Corp., St. Louis, Mo.  
 National Malleable & Steel Castings Co., Cleveland, O.  
 Oliver Mch. Co., Grand Rapids, Mich.  
 Osgood Co., Marion, O.  
 Ottumwa Iron Wks., Ottumwa, Ia.  
 Pettibone-Mulliken Corp., Chicago, Ill.

Robins Conveying Belt Co., Passaic, N. J.  
 Ross-Meehan Foundries, Chattanooga, Tenn.  
 F. L. Smith & Co., New York, N. Y.  
 Stearns-Roger Mfg. Co., Denver, Colo.  
 Straub Mfg. Co., Oakland, Calif.  
 Taylor-Wharton Iron & Steel Co., High Bridge, N. J.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 Vulcan Iron Wks., Wilkes-Barre, Penna.  
 Wall-Colmonoy Corp., Detroit, Mich.  
 Webster Mfg., Inc., Tiffin, O.  
 Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.  
 Wisconsin Foundry & Mach. Co., Madison, Wis.

**CATCH BASIN BLOCK MACHINERY & MOLDS**

Besser Mfg. Co., Alpena, Mich.

W. E. Dunn Mfg. Co., Holland, Mich.  
 Jackson & Church Co., Saginaw, Mich.  
 Multiplex Concrete Mch. Co., Elmore, O.  
 Stearns Mfg. Co., Inc., Adrian, Mich.

**CEMENT DISPERSION & PLASTERIZING AGENTS**

American Fluoresit Co., Inc., Cincinnati, O.  
 Dewey & Almy Chem. Co., Cambridge, Mass.  
 Lasting Prod. Co., Baltimore, Md.  
 The Master Builders Co., Cleveland, O.  
 Sika, Inc., New York, N. Y.  
 Super Concrete Emulsions, Ltd., Los Angeles, Calif.

**CEMENT & MASONRY COLORS**

American Fluoresit Co., Inc., Cincinnati, O.  
 Colorcrete Industries, Inc., Holland, Mich.  
 W. E. Dunn Mfg. Co., Holland, Mich.  
 Harshaw Chem. Co., Cleveland, O.  
 Lasting Prod. Co., Baltimore, Md.  
 The Master Builders Co., Cleveland, O.  
 George S. Meppham Corp., East St. Louis, Ill.  
 Ranetite Mfg. Co., Inc., St. Louis, Mo.  
 Reardon Color & Chem. Wks., Cincinnati, O.  
 Rickatson Mineral Color Wks., Milwaukee, Wis.  
 Sullivan Co., Memphis, Tenn.  
 Tammis Silica Co., Chicago, Ill.  
 Utility Color Co., Newark, N. J.  
 E. K. Williams & Co., Easton, Penna.

**CEMENT PLANTS (Engineers and Contractors)**

Erie Steel Construction Co., Erie, Penna.  
**Heltzel Steel Form & Iron Co., Warren, O.**  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Kensington Steel Co., Chicago, Ill.  
 Pennsylvania Crusher Co., Philadelphia, Penna.  
 F. L. Smith & Co., New York, N. Y.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 Webber Equip. Co., New York, N. Y.  
 Western Mch. Co., San Francisco, Calif.

**CEMENT PROCESSING (Special)**

Cement Process Corp., Mexico City, Mex.  
**CEMENT PUMPS**  
 American Manganese Steel Div., Chicago Heights, Ill.  
 Fuller Co., Catsaqua, Penna.  
 Mine & Smelter Supply Co., Denver, Colo.  
 F. L. Smith & Co., New York, N. Y.

**CENTRAL MIXING PLANTS (Concrete)**

C. O. Bartlett & Snow Co., Cleveland, O.  
 Blaw-Knox Co., Blawnox, Penna.  
 Bodinson Mfg. Co., San Francisco, Calif.  
 Butler Bin Co., Waukesha, Wis.  
 Chain Belt Co., Milwaukee, Wis.  
 The Columbus Conveyor Co., Columbus, O.  
 Continental Gin Co., Birmingham, Ala.  
 Conveyors Co., Inc., Los Angeles, Calif.  
 Erie Steel Construction Co., Erie, Penna.  
 Garlinghouse Bros., Los Angeles, Calif.  
**Heltzel Steel Form & Iron Co., Warren, O.**  
 Jackson & Church Co., Saginaw, Mich.  
 Jaeger Mach. Co., Columbus, O.  
 Kensington Steel Co., Chicago, Ill.  
 Link-Belt Co., Chicago, Ill.  
 Mixermobile Co., Inc., Los Angeles, Calif. (Portable)  
 Neff & Fry Co., Camden, O.  
 T. L. Smith Co., Milwaukee, Wis.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.

**CENTRIFUGE (Cement Slurry, Etc.)**

Bird Mach. Co., South Walpole, Mass.  
 The Dorr Co., Inc., New York, N. Y.  
 Separation Process Co., Catsaqua, Penna.  
 F. L. Smith & Co., New York, N. Y.  
**CHAIN (Conveyor & Elevator)**  
 American Manganese Steel Div., Chicago Heights, Ill.  
 Earle C. Bacon, Inc., New York, N. Y.  
 C. O. Bartlett & Snow Co., Cleveland, O.

# DIRECTORY

Beaumont Birch Co., Philadelphia, Penna.  
Bodinson Mfg. Co., San Francisco, Calif.  
**Chain Belt Co., Milwaukee, Wis.**  
The Columbus Conveyor Co., Columbus, O.  
**Continental Gin Co., Birmingham, Ala.**  
Conveyor Co., Inc., Los Angeles, Calif.  
Fairfield Eng. Co., Marion, O.  
Farrell-Cheek Steel Co., Sandusky, O.  
Godfrey Conveyor Co., Elkhart, Ind.  
**The Jeffrey Mfg. Co., Columbus, O.**  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Kensington Steel Co., Chicago, Ill.  
**Link-Belt Co., Indianapolis, Ind.**  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
The McNally-Pittsburg Mfg. Corp., Pittsburg, Kan.  
Manganese Steel Forge Co., Philadelphia, Penna.  
National Steel Prod. Co., Kansas City, Mo.  
Palmer-Bee Co., Detroit, Mich.  
Pettibone-Mulliken Corp., Chicago, Ill.  
Sprout, Waldron & Co., Muncy, Penna.  
**Stephens-Adamson Mfg. Co., Aurora, Ill.**  
**Taylor-Wharton Iron & Steel Co., High Bridge, N. J.**  
Union Chain & Mfg. Co., Sandusky, O.  
Webster Mfg., Inc., Tiffin, O.  
Whitney Chain & Mfg. Co., Hartford, Conn.

## CHAIN (Dredge & Shovel)

American Manganese Steel Div., Chicago Heights, Ill.  
**Chain Belt Co., Milwaukee, Wis.**  
Erie Steel Foundry Co., Portland, Ore.  
George Haiss Mfg. Co., New York, N. Y.  
**The Jeffrey Mfg. Co., Columbus, O.**  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Kensington Steel Co., Chicago, Ill.  
**Link-Belt Co., Indianapolis, Ind.**  
Manganese Steel Forge Co., Philadelphia, Penna.  
Meekum Eng., Inc., Chicago, Ill.  
National Mallie & Steel Castings Co., Cleveland, O.  
Palmer-Bee Co., Detroit, Mich.  
Pettibone-Mulliken Corp., Chicago, Ill.  
Whitney Chain & Mfg. Co., Hartford, Conn.

## CHAIN DRIVES

American Manganese Steel Div., Chicago Heights, Ill.  
**Earle C. Bacon, Inc., New York, N. Y.**  
Bodinson Mfg. Co., San Francisco, Calif.  
**Chain Belt Co., Milwaukee, Wis.**  
**Continental Gin Co., Birmingham, Ala.**  
Conveyor Co., Inc., Los Angeles, Calif.  
Diamond Chain & Mfg. Co., Indianapolis, Ind.  
Godfrey Conveyor Co., Elkhart, Ind.  
**The Jeffrey Mfg. Co., Columbus, O.**  
Kensington Steel Co., Chicago, Ill.  
**Link-Belt Co., Indianapolis, Ind.**  
Simplicity System Co., Chattanooga, Tenn.  
**Stephens-Adamson Mfg. Co., Aurora, Ill.**  
Whitney Chain & Mfg. Co., Hartford, Conn.

## CHAIN (Heat Exchanger, Etc.)

Conveyor Co., Inc., Los Angeles, Calif.  
**The Jeffrey Mfg. Co., Columbus, O.**  
**F. L. Smidth & Co., New York, N. Y.**

## CHIMNEY BLOCK MACHINERY & MOLDS (Concrete)

Besser Mfg. Co., Alpena, Mich.  
Jackson & Church Co., Saginaw, Mich.  
Multiplex Concrete Mch. Co., Elmore, O.  
Stearns Mfg. Co., Inc., Adrian, Mich.

## CHUTES

Alpha Tank & Sheet Metal Mfg. Co., St. Louis, Mo.  
American Manganese Steel Div., Chicago Heights, Ill.  
Atlas Car & Mfg. Co., Cleveland, O.  
**Earle C. Bacon, Inc., New York, N. Y.**  
C. O. Bartlett & Snow Co., Cleveland, O.  
**Blaw-Knox Co., Blawnox, Penna.**  
Bodinson Mfg. Co., San Francisco, Calif.  
**Chain Belt Co., Milwaukee, Wis.**  
**Continental Gin Co., Birmingham, Ala.**

Conveyor Co., Inc., Los Angeles, Calif.  
Erie Steel Construction Co., Erie, Penna.  
Fairfield Eng. Co., Marion, O.  
Garlinghouse Bros., Los Angeles, Calif.  
Godfrey Conveyor Co., Elkhart, Ind.  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
**Hendrick Mfg. Co., Carbondale, Penna.**  
Insley Mfg. Corp., Indianapolis, Ind.  
**Jackson & Church Co., Saginaw, Mich.**  
**The Jeffrey Mfg. Co., Columbus, O.**  
Johnson, C. S. Co., Champaign, Ill.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
**McLanahan & Stone Corp., Hollidaysburg, Penna.**  
Manganese Steel Forge Co., Philadelphia, Penna.  
Ransome Concrete Mch. Co., Dunellen, N. J.  
**Robins Conveying Belt Co., Passaic, N. J.**  
**Stephens-Adamson Mfg. Co., Aurora, Ill.**  
Superior Metal Prod. Co., Inc., Marion, Ind.  
**Traylor Eng. & Mfg. Co., Allentown, Penna.**  
Wisconsin Foundry & Mach. Co., Madison, Wis.

## CLARIFIERS AIR (See Air Filters)

## CLASSIFIERS (Hydraulic)

Bird Mach. Co., South Walpole, Mass.  
**Colorado Iron Wks. Co., Denver, Colo.**  
Deister Concentrator Co., Ft. Wayne, Ind.  
Deister Mach. Co., Ft. Wayne, Ind.  
Denver Equip. Co., Denver, Colo.  
**The Dorr Co., Inc., New York, N. Y.**  
**Eagle Iron Wks., Des Moines, Ia.**  
**Hardinge Co., Inc., York, Penna.**  
Kennedy-Van Saun Mfg. Co., New York, N. Y.  
Knickerbocker Co., Jackson, Mich.  
**The Mine and Smelter Supply Co., Denver, Colo.**  
Smith Eng. Wks., Milwaukee, Wis.  
**Stephens-Adamson Mfg. Co., Aurora, Ill.**  
Straub Mfg. Co., Oakland, Calif.  
**Traylor Eng. & Mfg. Co., Allentown, Penna.**  
Western Mch. Co., San Francisco, Calif.

## CLASSIFIERS (Sand)

Allen Cone & Mch. Co., New York, N. Y.  
Lewistown Foundry & Mach. Co., Lewistown, Penna.

## CLEANING MACHINES BAG (See Bag Cleaners)

## CLINKER COOLERS (See Coolers, Cement, Lime, Etc.)

## COAL PULVERIZING EQUIPMENT

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Babcock & Wilcox Co., New York, N. Y.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Bonnot Co., Canton, O.  
Combustion Eng. Corp., Chicago, Ill.  
**Dixie Mch. Mfg. Co., St. Louis, Mo.**  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
**Hardinge Co., Inc., York, Penna.**  
**The Jeffrey Mfg. Co., Columbus, O.**  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Kensington Steel Co., Chicago, Ill.  
**Mine & Smelter Supply Co., Denver, Colo.**  
Patterson Foundry & Mach. Co., E. Liverpool, O.  
Raymond Pulverizer Co., Chicago, Ill.  
Robins Conveying Belt Co., Passaic, N. J.  
**F. L. Smidth & Co., New York, N. Y.**  
**Stephens-Adamson Mfg. Co., Aurora, Ill.**  
Strong-Scott Mfg. Co., Minneapolis, Minn.  
Sturtevant Mill Co., Dorchester, Mass.  
**Traylor Eng. & Mfg. Co., Allentown, Penna.**  
Whiting Corp., Harvey, Ill.  
**Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.**

## COLORS (Cement) (See Cement Colors)

## COLORS (Mortar) (See Masonry Colors)

## CONCENTRATORS (Ore)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Deister Concentrator Co., Ft. Wayne, Ind.  
Deister Mach. Co., Ft. Wayne, Ind.  
Dings Magnetic Separator Co., Milwaukee, Wis.  
Gallagher Co., Salt Lake City, Utah.  
**Hardinge Co., Inc., York, Penna.**  
**Mine & Smelter Supply Co., Denver, Colo.**  
Ritter Prod. Corp., Rochester, N. Y.  
Separations Eng. Corp., New York, N. Y.  
Straub Mfg. Co., Oakland, Calif.  
Western Mach. Co., San Francisco, Calif.

## CONCRETE BLOCK MACHINES (See Block Machines, Building, Concrete)

## CONCRETE MIXERS

Anchor Concrete Mach. Co., Columbus, O.  
**Besser Mfg. Co., Alpena, Mich.**  
**Blaw-Knox Co., Blawnox, Penna.**  
**Chain Belt Co., Milwaukee, Wis.**  
**Concrete Transport Mixer Co., St. Louis, Mo.**  
Construction Mch. Co., Waterloo, Ia.  
Continental Motors Corp., Detroit, Mich.  
**W. E. Dunn Mfg. Co., Holland, Mich.**  
Erie Steel Construction Co., Erie, Penna.  
Essick Mch. Co., Los Angeles, Calif.  
Foote, J. B., Foundry Co., Fred-ericktown, O.  
**Jackson & Church Co., Saginaw, Mich.**  
**Jaeger Mach. Co., Columbus, O.**  
Kensington Steel Co., Chicago, Ill.  
**The Kent Mach. Co., Cuyahoga Falls, O.**  
**Koehring Co., Milwaukee, Wis.**  
Leach Co., Oshkosh, Wis.  
McCartier Iron Wks., Inc., Norristown, Penna.  
Miles Mfg. Co., Jackson, Mich.  
Mixermobile Co., Inc., Los Angeles, Calif.  
**Multiplex Concrete Mch. Co., Elmore, O.**  
Ransome Concrete Mch. Co., Dunellen, N. J.  
**T. L. Smith Co., Milwaukee, Wis.**  
**Stearns Mfg. Co., Inc., Adrian, Mich.**

## CONCRETE PAINTS & COATINGS

American Cement Paint Co., Chattanooga, Tenn.  
American Fluoresit Co., Inc., Cincinnati, O.  
Coddington, E. D., Mfg. Co., Milwaukee, Wis.  
Colorcrete Industries, Inc., Holland, Mich.  
**W. E. Dunn Mfg. Co., Holland, Mich.**  
Lasting Prod. Co., Baltimore, Md.  
National Chem. & Mfg. Co., Chicago, Ill.  
Reardon Color & Chem. Wks., Cincinnati, O.  
Sullivan Co., Memphis, Tenn.  
Super Concrete Emulsions, Ltd., Los Angeles, Calif.  
Tamm Silica Co., Chicago, Ill.  
Trucon Laboratories, Inc., Detroit, Mich.

## CONCRETE PRODUCTS CURING EQUIPMENT

Blystone Mfg. Co., Cambridge Springs, Penna.  
The Chase Foundry & Mfg. Co., Columbus, O.  
**Commercial Shearing & Stamping Co., Youngstown, O.**  
Hollystone Co., N. Hollywood, Calif.  
**Jackson & Church Co., Saginaw, Mich.**  
**The Kent Mach. Co., Cuyahoga Falls, O.**  
Lasting Prod. Co., Baltimore, Md.  
**Multiplex Concrete Mch. Co., Elmore, O.**  
**Stearns Mfg. Co., Inc., Adrian, Mich.**  
Webber Equip. Co., New York, N. Y.

## CONCRETE PRODUCTS HANDLING EQUIPMENT

Barrett-Cravens Co., Chicago, Ill.  
**Besser Mfg. Co., Alpena, Mich.**  
The Chase Foundry & Mfg. Co., Columbus, O.  
**W. E. Dunn Mfg. Co., Holland, Mich.**  
Garlinghouse Bros., Los Angeles, Calif.  
Godfrey Conveyor Co., Elkhart, Ind.  
Hollystone Co., N. Hollywood, Calif.  
**Jackson & Church Co., Saginaw, Mich.**  
**The Jeffrey Mfg. Co., Columbus, O.**  
Mixermobile Co., Inc., Los Angeles, Calif.  
**Multiplex Concrete Mch. Co., Elmore, O.**  
Portable Mch. Div., A. B. Farquhar Co., York, Penna.

**Stearns Mfg. Co., Inc., Adrian, Mich.**  
**Stephens-Adamson Mfg. Co., Aurora, Ill.**  
Williamette Hyster Co., Portland, Ore.

## CONCRETE REINFORCING (Steel)

Automatic Spring Coiling Co., Chicago, Ill.  
Jones & Laughlin Steel Corp., Muncy, Penna.  
Union Steel Prod. Co., Albion, Mich.  
**Wickwire Spencer Steel Co., New York, N. Y.**

## CONCRETE WATERPROOFING & DAMPPROOFING

American Colloid, Inc., Chicago, Ill.  
American Fluoresit Co., Inc., Cincinnati, O.  
Billings-Chapin Co., Cleveland, O.  
Columbia Alkali Corp., Barborton, O. (Div. of Pittsburgh Plate Glass).  
Corona Prod. Co., Rogers, Ark.  
**W. E. Dunn Mfg. Co., Holland, Mich.**  
Harshaw Chem. Co., Cleveland, O.  
Kotal Company, New York, N. Y.  
Lasting Prod. Co., Baltimore, Md.  
**The Master Builders Co., Cleveland, O.**  
Metasap Chem. Co., Inc., Harrison, N. J.  
Michigan Alkali Corp., Detroit, Mich.  
Protective Coatings, Inc., Detroit, Mich.  
Ranette Mfg. Co., Inc., St. Louis, Mo.  
Reardon Color & Chem. Wks., Cincinnati, O.  
Ricketson Mineral Color Wks., Milwaukee, Wis.  
Solvay Sales Corp., New York, N. Y.  
Sullivan Co., Memphis, Tenn.  
Super Concrete Emulsions, Ltd., Los Angeles, Calif.  
Tamm Silica Co., Chicago, Ill.  
Trucon Laboratories, Inc., Detroit, Mich.

## CONDUIT (Concrete) PIPE MACHINES

Concrete Pipe Mch. Co., Sioux City, Ia.

## CONTROL SYSTEMS (Draft, Temperature, Pressure)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Bailey Meter Co., Cleveland, O.  
Bristol Co., Waterbury, Conn.  
Brown Instrument Co., Philadelphia, Penna.  
Hays Corp., Michigan City, Ind.  
Leeds & Northrup Co., Philadelphia, Penna.  
C. J. Tagliabue Mfg. Co., Brooklyn, N. Y.  
**Westinghouse Electric & Mfg. Co., E. Pittsburgh, Penna.**  
Wheeler Instruments Co., Chicago, Ill.

## CONVERTERS (Electric)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
General Electric, Schenectady, N. Y.  
**Westinghouse Electric & Mfg. Co., E. Pittsburgh, Penna.**

## CONVEYOR BELT TRIPPERS

**Earle C. Bacon, Inc., New York, N. Y.**  
Barber Greene Co., Aurora, Ill.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Bodinson Mfg. Co., San Francisco, Calif.

**Chain Belt Co., Milwaukee, Wis.**  
**The Columbus Conveyor Co., Columbus, O.**  
**Continental Gin Co., Birmingham, Ala.**

Conveyor Co., Inc., Los Angeles, Calif.  
**Diamond Iron Wks., Inc., Minneapolis, Minn.**

Fairfield Eng. Co., Marion, O.  
Godfrey Conveyor Co., Elkhart, Ind.  
**Jackson & Church Co., Saginaw, Mich.**

**The Jeffrey Mfg. Co., Columbus, O.**  
National Steel Prod. Co., Kansas City, Mo.

Portable Mch. Div., A. B. Farquhar Co., York, Penna.  
**Robins Conveying Belt Co., Passaic, N. J.**

Scraper Conveyor Corp., Hammond, Ind.  
Sprout, Waldron & Co., Muncy, Penna.

**Stephens-Adamson Mfg. Co., Aurora, Ill.**  
Webster Mfg., Inc., Tiffin, O.

Western Mch. Co., San Francisco, Calif.

## CONVEYOR IDLERS

**Earle C. Bacon, Inc., New York, N. Y.**

# DIRECTORY

Barber-Greene Co., Aurora, Ill.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Bodinson Mfg. Co., San Francisco, Calif.  
Browning Mfg. Co., Inc., Maysville, Ky.  
Burch Corp., Crestline, O.  
Chain Belt Co., Milwaukee, Wis.  
The Columbus Conveyor Co., Columbus, O.  
Continental Gin Co., Birmingham, Ala.  
Conveyor Co., Inc., Los Angeles, Calif.  
Dodge Mfg. Corp., Mishawaka, Ind.  
Godfrey Conveyor Co., Elkhart, Ind.  
Greenville Mfg. Wks., Greenville, O.  
George Haiss Mfg. Co., New York, N. Y.  
Huron Industries, Inc., Alpena, Mich.  
Iowa Mfg. Co., Cedar Rapids, Ia.  
The Jeffrey Mfg. Co., Columbus, O.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Link-Belt Co., Chicago, Ill.  
McNally-Pittsburg Mfg. Corp., Pittsburg, Kans.  
Mine & Smelter Supply Co., Denver, Colo.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Portable Mch. Div., A. B. Farquhar Co., York, Penna.  
Screw Conveyor Corp., Hammond, Ind.  
Smith Eng. Wks., Milwaukee, Wis.  
Sprout, Waldron & Co., Muncy, Penna.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Webster Mfg., Inc., Tiffin, O.  
Western Mch. Co., San Francisco, Calif.  
Wisconsin Foundry & Mach. Co., Madison, Wis.  
T. B. Wood's Sons Co., Chambersburg, Penna.

## CONVEYORS (Apron)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
American Manganese Steel Div., Chicago Heights, Ill.  
Earle C. Bacon, Inc., New York, N. Y.  
Barber-Greene Co., Aurora, Ill.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Bodinson Mfg. Co., San Francisco, Calif.  
Brady Conveyors Corp., Chicago, Ill.  
Chain Belt Co., Milwaukee, Wis.  
The Columbus Conveyor Co., Columbus, O.  
Continental Gin Co., Birmingham, Ala.  
Conveyor Co., Inc., Los Angeles, Calif.  
Diamond Iron Wks., Inc., Minneapolis, Minn.  
Fairfield Eng. Co., Marion, O.  
Godfrey Conveyor Co., Elkhart, Ind.  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
George Haiss Mfg. Co., New York, N. Y.  
Iowa Mfg. Co., Cedar Rapids, Ia.  
The Jeffrey Mfg. Co., Columbus, O.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Kensington Steel Co., Chicago, Ill.  
Korb-Pettit Wire Fabrics & Iron Wks., Inc., Philadelphia, Penna.  
Link-Belt Co., Chicago, Ill.  
Link-Track Eng. Co., Chicago, Ill.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
McNally-Pittsburg Mfg. Corp., Pittsburg, Kans.  
Palmer-Bee Co., Detroit, Mich.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Rogers Iron Wks. Co., Joplin, Mo.  
Smith Eng. Wks., Milwaukee, Wis.  
Standard Transmission Equip. Co., Los Angeles, Calif.  
Stearns Mfg. Co., Inc., Adrian, Mich.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Union Chain & Mfg. Co., Sandusky, O.  
Webster Mfg., Inc., Tiffin, O.  
Western Mch. Co., San Francisco, Calif.

## CONVEYORS (Belt)

Anderson Eng. Co., Cambridge, Mass.  
Austin-Western Road Mch. Co., Aurora, Ill.  
Earle C. Bacon, Inc., New York, N. Y.  
Barber-Greene Co., Aurora, Ill.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Beaumont Birch Co., Philadelphia, Penna.  
Bodinson Mfg. Co., San Francisco, Calif.  
Brady Conveyors Corp., Chicago, Ill.

H. Brewer & Co., Tecumseh, Mich.  
Chain Belt Co., Milwaukee, Wis.  
The Columbus Conveyor Co., Columbus, O.  
Continental Gin Co., Birmingham, Ala.  
Conveyor Co., Inc., Los Angeles, Calif.  
Diamond Iron Wks., Inc., Minneapolis, Minn.  
Dodge Mfg. Corp., Mishawaka, Ind.  
Elmco Corp., Salt Lake City, Utah.  
Fairfield Eng. Co., Marion, O.  
Godfrey Conveyor Co., Elkhart, Ind.  
Greenville Mfg. Wks., Greenville, O.  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
George Haiss Mfg. Co., New York, N. Y.  
Robert Holmes & Bros., Inc., Danville, Ill.  
Huron Industries, Inc., Alpena, Mich.  
Industrial Brownhoist Corp., Bay City, Mich.  
Iowa Mfg. Co., Cedar Rapids, Ia.  
Jackson & Church Co., Saginaw, Mich.  
The Jeffrey Mfg. Co., Columbus, O.  
Jones & Laughlin Steel Corp., Muncy, Penna.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
The Kent Mach. Co., Cuyahoga Falls, O.  
Korb-Pettit Wire Fabrics & Iron Wks., Inc., Philadelphia, Penna.  
Lewistown Foundry & Mach. Co., Lewistown, Penna.  
Link-Belt Co., Chicago, Ill.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
The McNally-Pittsburg Mfg. Corp., Pittsburg, Kans.  
Meekum Eng. Inc., Chicago, Ill.  
Mine & Smelter Supply Co., Denver, Colo.  
Multiplex Concrete Mch. Co., Elmore, O.  
National Steel Prod. Co., Kansas City, Mo.  
New Holland Mach. Co., New Holland, Penna.  
Palmer-Bee Co., Detroit, Mich.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Portable Mch. Div., A. B. Farquhar Co., York, Penna.  
Quaker Rubber Corp., Philadelphia, Penna.  
Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown, O.  
Rogers Iron Wks. Co., Joplin, Mo.  
Sandvik Steel, Inc., New York, N. Y.  
Screw Conveyor Corp., Hammond, Ind.  
Smith Eng. Wks., Milwaukee, Wis.  
Sprout, Waldron & Co., Muncy, Penna.  
Stearns Mfg. Co., Inc., Adrian, Mich.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Universal Eng. Corp., Cedar Rapids, Ia.  
Universal Road Mch. Co., Kingston, N. Y.  
Webster Mfg., Inc., Tiffin, O.  
Western Mch. Co., San Francisco, Calif.  
Wisconsin Foundry & Mach. Co., Madison, Wis.

## CONVEYORS (Overhead Travelling)

Chain Belt Co., Milwaukee, Wis.  
Godfrey Conveyor Co., Elkhart, Ind.  
The Jeffrey Mfg. Co., Columbus, O.  
Link-Belt Co., Chicago, Ill.  
Loudon Mch. Co., Fairfield, Ia.  
National Steel Prod. Co., Kansas City, Mo.  
Palmer-Bee Co., Detroit, Mich.  
Stearns Mfg. Co., Inc., Adrian, Mich.

## CONVEYORS (Pan)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
American Manganese Steel Div., Chicago Heights, Ill.  
Barber-Greene Co., Aurora, Ill.  
Bodinson Mfg. Co., San Francisco, Calif.  
Chain Belt Co., Milwaukee, Wis.  
Continental Gin Co., Birmingham, Ala.  
Conveyor Co., Inc., Los Angeles, Calif.  
Godfrey Conveyor Co., Elkhart, Ind.  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
The Jeffrey Mfg. Co., Columbus, O.  
Kensington Steel Co., Chicago, Ill.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
McNally-Pittsburg Mfg. Corp., Pittsburg, Kans.  
Manganese Steel Forge Co., Philadelphia, Penna.  
National Steel Prod. Co., Kansas City, Mo.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.

Rogers Iron Wks. Co., Joplin, Mo.  
Standard Transmission Equip. Co., Los Angeles, Calif.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Webster Mfg., Inc., Tiffin, O.

## CONVEYORS PNEUMATIC (See Air Conveyors)

Austin-Western Road Mch. Co., Aurora, Ill.  
Earle C. Bacon, Inc., New York, N. Y.  
Barber-Greene Co., Aurora, Ill.  
Bodinson Mfg. Co., San Francisco, Calif.  
Burch Corp., Crestline, O.  
Clark Tractor, Battle Creek, Mich.  
Conveyor Co., Inc., Los Angeles, Calif.  
Diamond Iron Wks., Inc., Minneapolis, Minn.  
Draco Corp., Cleveland, O.  
Fuller Co., Catawauqua, Penna.  
General Conveyor & Mfg. Co., St. Louis, Mo.  
Godfrey Conveyor Co., Elkhart, Ind.  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
Iowa Mfg. Co., Cedar Rapids, Ia.  
The Jeffrey Mfg. Co., Columbus, O.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Link-Belt Co., Philadelphia, Penna.  
Mine & Smelter Supply Co., Denver, Colo.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Portable Mch. Div., A. B. Farquhar Co., York, Penna.  
Rogers Iron Wks. Co., Joplin, Mo.  
Standard Transmission Equip. Co., Los Angeles, Calif.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Universal Eng. Corp., Cedar Rapids, Ia.  
Wisconsin Foundry & Mach. Co., Madison, Wis.

## CONVEYORS (Rotary)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Chain Belt Co., Milwaukee, Wis.  
Continental Gin Co., Birmingham, Ala.  
Conveyor Co., Inc., Los Angeles, Calif.  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
Harcos Co., Inc., York, Penna.  
Link-Belt Co., Chicago, Ill.  
Stephens-Adamson Mfg. Co., Aurora, Ill.

## CONVEYORS (Screw)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Alpha Tank & Sheet Metal Mfg. Co., St. Louis, Mo.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Buldy Conveyors Corp., Chicago, Ill.  
L. Burmeister Co., Milwaukee, Wis.  
Butler Bin Co., Waukesha, Wis.  
Chain Belt Co., Milwaukee, Wis.  
The Columbus Conveyor Co., Columbus, O.  
Continental Gin Co., Birmingham, Ala.  
Conveyor Co., Inc., Los Angeles, Calif.  
Fairfield Eng. Co., Marion, O.  
Godfrey Conveyor Co., Elkhart, Ind.  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
The Jeffrey Mfg. Co., Columbus, O.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Kensington Steel Co., Chicago, Ill.  
Link-Belt Co., Chicago, Ill.  
The McNally-Pittsburg Mfg. Corp., Pittsburg, Kans.  
National Steel Prod. Co., Kansas City, Mo.  
Northern Blower Co., Cleveland, O.  
Palmer-Bee Co., Detroit, Mich.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Screw Conveyor Corp., Hammond, Ind.  
Sprout, Waldron & Co., Muncy, Penna.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Webster Mfg., Inc., Tiffin, O.

## CONVEYORS (Weighing)

Beaumont Birch Co., Philadelphia, Penna.  
Builders-Providence, Inc., Providence, R. I.  
Chain Belt Co., Milwaukee, Wis.  
Continental Gin Co., Birmingham, Ala.  
Godfrey Conveyor Co., Elkhart, Ind.  
The Jeffrey Mfg. Co., Columbus, O.  
Link-Belt Co., Chicago, Ill.  
Merrick Scale Mfg. Co., Passaic, N. J.  
The Mine and Smelter Supply Co., Denver, Colo.  
Richardson Scale Co., Clifton, N. J.

Robins Conveying Belt Co., Passaic, N. J.  
Schaffer Poidometer Co., Pittsburgh, Penna.  
Stearns Mfg. Co., Inc., Adrian, Mich.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Streeter-Amet Co., Chicago, Ill.

## COOLERS (Cement, Lime, Etc.)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Blaw-Knox Co., Blawnox, Penna.  
Bonnet Co., Canton, O.  
Cement Mill Equip. Co., Plymouth, Mich.  
L. R. Christie Co., New York, N. Y.  
Ellerman Co., Salt Lake City, Utah  
Fuller Co., Catawauqua, Penna.  
Hardinge Co., Inc., York, Penna.  
The Jeffrey Mfg. Co., Columbus, O.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Lime & Hydrate Plants Co., York, Penna.  
Louisville Drying Machy. Co., Inc., Louisville, Ky.  
McGann Mfg. Co., Inc., York, Penna.  
Manitowoc Eng. Wks., Manitowoc, Wis.  
Patterson Foundry & Mach. Co., E. Liverpool, O.  
Ruggles-Coles Eng. Co., New York, N. Y.  
F. L. Smith & Co., New York, N. Y.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Vulcan Iron Wks., Wilkes-Barre, Penna.  
Webber Equip. Co., New York, N. Y.

## CORN CRIB BLOCK & TILE MACHINES (Concrete)

Besser Mfg. Co., Alpena, Mich.  
W. E. Dunn Mfg. Co., Holland, Mich.  
Multiplex Concrete Machy. Co., Elmore, O.  
Stearns Mfg. Co., Inc., Adrian, Mich.

## CORRECTING BASINS (Slurry, Etc.)

The Dorr Co., Inc., New York, N. Y.  
F. L. Smith & Co., New York, N. Y.

## COUPLINGS (Hose)

Chicago Pneumatic Tool Co., New York, N. Y.  
Cleveland Rock Drill Co., Cleveland, O.  
Dixon Valve & Coupling Co., Philadelphia, Penna.  
Gates Rubber Co., Denver, Colo.  
Goodall Rubber Co., Inc., Philadelphia, Penna.  
Ingersoll-Rand Co., New York, N. Y.  
Knox Mfg. Co., Philadelphia, Penna.  
Manhattan Rubber Mfg. Div., Passaic, N. J.  
Meekum Eng., Inc., Chicago, Ill.  
Mine & Smelter Supply Co., Denver, Colo.  
New York Belting & Packing Co., New York, N. Y.  
United States Rubber Co., New York, N. Y.  
Western Machy. Co., San Francisco, Calif.

## CRANE, BOOM, CABLE STABILIZER

McCaffrey-Ruddock Tagline Corp., Los Angeles, Calif.

## CRANES (Crawler, Locomotive, Truck)

American Hoist & Derrick Co., St. Paul, Minn.  
Atlas Car & Mfg. Co., Cleveland, O.  
Austin-Western Road Machy. Co., Aurora, Ill.  
Bay City Shovels, Inc., Bay City, Mich.  
Browning Crane & Shovel Co., Cleveland, O.  
Buckeye Traction Ditcher Co., Findlay, O.  
Bucyrus-Erie Co., S. Milwaukee, Wis.  
Byers Mach. Co., Ravenna, O.  
Clyde Iron Wks., Inc., Duluth, Minn.  
Cooper-Bessemer Corp., Mt. Vernon, O.  
Erie Steel Construction Co., Erie, Penna.  
General Excavator Co., Marion, O.  
Hanson Excavator Wks., Tiffin, O.  
Harnischfeger Corp., Milwaukee, Wis.  
Industrial Brownhoist Corp., Bay City, Mich.  
Insley Mfg. Corp., Indianapolis, Ind.

# DIRECTORY

Keystone Driller Co., Beaver Falls, Penna.  
 Koehring Co., Milwaukee, Wis.  
 Lima Locomotive Wks., Inc., Shovel and Crane Div., Lima, O.  
 Link-Belt Speeder Corp., Chicago, Ill.  
 Manitowoc Eng. Wks., Manitowoc, Wis.  
 Marion Steam Shovel Co., Marion, O.  
 Michigan Power Shovel Co., Benton Harbor, Mich.  
 Northwest Eng. Co., Chicago, Ill.  
 Ohio Locomotive Crane Co., Bucyrus, O.  
 Osgood Co., Marion, O.  
 Palmer-Bee Co., Detroit, Mich.  
 Quickway Truck Shovel Co., Denver, Colo.  
 Thew Shovel Co., Lorain, O.  
 Willamette Hyster Co., Portland, Ore.

## CRANES (Hammer Head, Ship, Etc.)

Clyde Iron Wks., Inc., Duluth, Minn.  
 Dobbie Foundry & Mach. Co., Niagara Falls, N. Y.  
 Harnischfeger Corp., Milwaukee, Wis.  
 Lima Locomotive Wks., Shovel and Crane Div., Lima, O.  
 Northwest Eng. Co., Chicago, Ill.  
 CRANES (Overhead Traveling)  
 Chisholm-Moore Hoist Corp., Tonawanda, N. Y.  
 The Cleveland Crane & Eng. Co., Wickliffe, O.  
 H. D. Conkey & Co., Mendota, Ill.  
 Curtis Pneumatic Machy., Inc., St. Louis, Mo.  
 Electro Lift, Inc., New York, N. Y.  
 Erie Steel Construction Co., Erie, Penna.  
 Godfrey Conveyor Co., Elkhart, Ind.  
 Harnischfeger Corp., Milwaukee, Wis.  
 Louden Machy. Co., Fairfield, Ia.  
 National Steel Prod. Co., Kansas City, Mo.  
 Northern Eng. Wks., Detroit, Mich.  
 Palmer-Bee Co., Detroit, Mich.  
 Whiting Corp., Harvey, Ill.

## CRANES (Tractor)

Browning Crane & Shovel Co., Cleveland, O.  
 Heli Co., Milwaukee, Wis.  
 The Hughes-Keenan Co., Mansfield, O.  
 Keystone Driller Co., Beaver Falls, Penna.  
 Koehring Co., Milwaukee, Wis.  
 R. G. LeTourneau, Inc., Peoria, Ill.  
 Lima Locomotive Wks., Inc., Shovel and Crane Div., Lima, O.  
 Manitowoc Eng. Wks., Manitowoc, Wis.  
 National Steel Products Co., Kansas City, Mo.  
 Northwest Eng. Co., Chicago, Ill.  
 Trackson Co., Milwaukee, Wis.  
 Willamette Hyster Co., Portland, Ore.

## CRAWLER ATTACHMENTS

American Manganese Steel Div., Chicago Heights, Ill.  
 Caterpillar Tractor Co., E. Peoria, Ill.  
 Kensington Steel Co., Chicago, Ill.  
 Keystone Driller Co., Beaver Falls, Penna.  
 Link-Belt Speeder Corp., Chicago, Ill.  
 Link-Track Eng. Co., Chicago, Ill.  
 Manitowoc Eng. Wks., Manitowoc, Wis.  
 A. Streich & Bros., Oshkosh, Wis.

## CRAYONS (Marking Concrete)

Markal Co., Chicago, Ill.

## CRUSHER PARTS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
 Alloy Steel & Metals Co., Los Angeles, Calif.  
 American Manganese Steel Div., Chicago Heights, Ill.  
 American Pulverizer Co., St. Louis, Mo.  
 Babcock & Wilcox Co., New York, N. Y.  
 Earle C. Bacon, Inc., New York, N. Y.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 C. G. Buchanan Co., Inc., New York, N. Y.  
 Commercial Steel Casting Co., Marion, O.  
 Dixie Machy. Mfg. Co., St. Louis, Mo.  
 Eagle Crusher Co., Inc., Gallon, O.  
 Electric Steel Fdry. Co., Portland, Ore.  
 Frog, Switch & Mfg. Co., Carlisle, Penna.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.

Iowa Mfg. Co., Cedar Rapids, Ia.  
 Jeffrey Mfg. Co., Columbus, O.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Kensington Steel Co., Chicago, Ill.  
 McLanahan & Stone Corp., Hollidaysburg, Penna.  
 Mine & Smelter Supply Co., Denver, Colo.  
 Pennsylvania Crusher Co., Philadelphia, Penna.  
 Pettibone-Mulliken Corp., Chicago, Ill.  
 Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
 Prater Pulverizer Co., Chicago, Ill.  
 Robins Conveying Belt Co., Passaic, N. J.  
 Rogers Iron Wks. Co., Joplin, Mo.  
 Smith Eng. Wks., Milwaukee, Wis.  
 Straub Mfg. Co., Oakland, Calif.  
 Taylor-Wharton Iron & Steel Co., High Bridge, N. J.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 Webster Mfg., Inc., Tiffin, O.  
 Western Machy. Co., San Francisco, Calif.  
 Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.  
 Wisconsin Foundry & Mach. Co., Madison, Wis.

## CRUSHERS (Gyratory)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
 Alloy Steel & Metals Co., Los Angeles, Calif.  
 Anchor Concrete Machy. Co., Columbus, O.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 C. G. Buchanan Co., Inc., New York, N. Y.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Kensington Steel Co., Chicago, Ill.  
 Lewistown Foundry & Mach. Co., Lewistown, Penna.  
 The Mine & Smelter Supply Co., Denver, Colo.  
 New Holland Mach. Co., New Holland, Penna.  
 Nordberg Mfg. Co., Milwaukee, Wis.  
 Smith Eng. Wks., Milwaukee, Wis.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 Universal Road Machy. Co., Kingston, N. Y.  
 Weaver Mfg. Co., Los Angeles, Calif.  
 Western Machy. Co., San Francisco, Calif.

## CRUSHERS (Hammer)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
 American Pulverizer Co., St. Louis, Mo.  
 Anchor Concrete Machy. Co., Columbus, O.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Blaw-Knox Co., Blawnox, Penna.  
 Bonnot Co., Canton, O.  
 Brooks Equip. & Mfg. Co., Knoxville, Tenn.  
 Columbus Steel Co. (U. S. Steel Corp. Sub.), San Francisco, Calif.  
 Diamond Iron Wks., Inc., Minneapolis, Minn.  
 Dixie Machy. Mfg. Co., St. Louis, Mo.  
 Eagle Crusher Co., Inc., Gallon, O.  
 Electric Steel Fdry. Co., Portland, Ore.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.  
 Jeffrey Mfg. Co., Columbus, O.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Kensington Steel Co., Chicago, Ill.  
 McLanahan & Stone Corp., Hollidaysburg, Penna.  
 Mine & Smelter Supply Co., Denver, Colo.  
 Multiple Concrete Machy. Co., Elmore, O.  
 New Holland Mach. Co., New Holland, Penna.  
 Pennsylvania Crusher Co., Philadelphia, Penna.  
 Prater Pulverizer Co., Chicago, Ill.  
 Separations Eng. Corp., New York, N. Y.  
 Stearns Mfg. Co., Inc., Adrian, Mich.  
 Stedman's Foundry & Mach. Wks., Aurora, Ind.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.  
 Sturtevant Mill Co., Dorchester, Mass.  
 Universal Eng. Corp., Cedar Rapids, Ia.  
 Vulcan Iron Wks., Wilkes-Barre, Penna.  
 Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

## CRUSHERS (Impact)

Greenville Mfg. Wks., Greenville, O.  
 Iowa Mfg. Co., Cedar Rapids, Ia.  
 Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

## CRUSHERS (Jaw)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
 Alloy Steel & Metals Co., Los Angeles, Calif.  
 Anchor Concrete Machy. Co., Columbus, O.  
 Austin-Western Road Machy. Co., Aurora, Ill.  
 Earle C. Bacon, Inc., New York, N. Y.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Birdsboro Steel Foundry & Mach. Co., Birdsboro, Penna.  
 Brooks Equip. & Mfg. Co., Knoxville, Tenn.  
 C. G. Buchanan Co., Inc., New York, N. Y.  
 Denver Equip. Co., Denver, Colo.  
 Diamond Iron Wks., Inc., Minneapolis, Minn.  
 Eagle Crusher Co., Inc., Gallon, O.  
 Good Roads Machy. Corp., Kennett Square, Penna.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.  
 Jeffrey Mfg. Co., Columbus, O.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Kensington Steel Co., Chicago, Ill.  
 Lewistown Foundry & Mach. Co., Lewistown, Penna.  
 McLanahan & Stone Corp., Hollidaysburg, Penna.  
 The Mine & Smelter Supply Co., Denver, Colo.  
 New Holland Mach. Co., New Holland, Penna.  
 Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
 Rogers Iron Wks. Co., Joplin, Mo.  
 Smith Eng. Wks., Milwaukee, Wis.  
 Stearns Mfg. Co., Inc., Adrian, Mich.  
 Stearns-Rogers Mfg. Co., Denver, Colo.  
 Straub Mfg. Co., Oakland, Calif.  
 Sturtevant Mill Co., Dorchester, Mass.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 Universal Eng. Corp., Cedar Rapids, Ia.  
 Universal Road Machy. Co., Kingston, N. Y.  
 Weaver Mfg. Co., Los Angeles, Calif.  
 Webb City and Carterville Foundry & Mach. Wks., Webb City, Mo.  
 Western Machy. Co., San Francisco, Calif.  
 Wisconsin Foundry & Mach. Co., Madison, Wis.

## CRUSHERS (Laboratory)

Abbe Eng. Co., New York, N. Y.  
 Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
 American Pulverizer Co., St. Louis, Mo.  
 Earle C. Bacon, Inc., New York, N. Y.  
 C. G. Buchanan Co., Inc., New York, N. Y.  
 Denver Equip. Co., Denver, Colo.  
 Eagle Crusher Co., Inc., Gallon, O.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.  
 Jeffrey Mfg. Co., Columbus, O.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Mine & Smelter Supply Co., Denver, Colo.  
 Raymond Pulverizer Co., Chicago, Ill.  
 Rogers Iron Wks. Co., Joplin, Mo.  
 Stearns-Rogers Mfg. Co., Denver, Colo.  
 Sturtevant Mill Co., Dorchester, Mass.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 Universal Eng. Corp., Cedar Rapids, Ia.  
 Western Machy. Co., San Francisco, Calif.  
 Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

## CRUSHERS (Ring)

Abbe Engineering Co., New York, N. Y.  
 American Pulverizer Co., St. Louis, Mo.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.  
 Jeffrey Mfg. Co., Columbus, O.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Kent Mill Co., Brooklyn, N. Y.  
 Pennsylvania Crusher Co., Philadelphia, Penna.  
 Stedman's Foundry & Mach. Wks., Aurora, Ind.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.  
 Sturtevant Mill Co., Dorchester, Mass.  
 Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

## CRUSHERS (Roll)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
 Alloy Steel & Metals Co., Los Angeles, Calif.  
 Anchor Concrete Machy. Co., Columbus, O.  
 Austin-Western Road Machy. Co., Aurora, Ill.  
 Earle C. Bacon, Inc., New York, N. Y.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Birdsboro Steel Foundry & Mach. Co., Birdsboro, Penna.  
 H. Brewer & Co., Tecumseh, Mich.  
 C. G. Buchanan Co., Inc., New York, N. Y.  
 Colorado Iron Wks. Co., Denver, Colo.  
 Denver Equip. Co., Denver, Colo.  
 Diamond Iron Wks., Inc., Minneapolis, Minn.  
 Eagle Iron Wks., Des Moines, Ia.  
 Greenville Mfg. Wks., Greenville, O.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.  
 Iowa Mfg. Co., Cedar Rapids, Ia.  
 Jeffrey Mfg. Co., Columbus, O.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Kensington Steel Co., Chicago, Ill.  
 McLanahan & Stone Corp., Hollidaysburg, Penna.  
 Maddox Foundry & Mach. Wks., Inc., Archer, Fla.  
 The Mine & Smelter Supply Co., Denver, Colo.  
 Multiple Concrete Machy. Co., Elmore, Ohio.  
 New Holland Mach. Co., New Holland, Penna.  
 Pennsylvania Crusher Co., Philadelphia, Penna.  
 Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
 Robins Conveying Belt Co., Passaic, N. J.  
 Rogers Iron Wks. Co., Joplin, Mo.  
 Smith Eng. Wks., Milwaukee, Wis.  
 Stearns Mfg. Co., Inc., Adrian, Mich.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.  
 Sturtevant Mill Co., Dorchester, Mass.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 Universal Eng. Corp., Cedar Rapids, Ia.  
 Vulcan Iron Wks., Wilkes-Barre, Penna.  
 Weaver Mfg. Co., Los Angeles, Calif.  
 Webb City & Carterville Foundry & Mach. Wks., Webb City, Mo.  
 Webb Corp., Webb City, Mo.  
 Webster Mfg., Inc., Tiffin, O.  
 F. M. Welch Eng. Service, Greenville, O.  
 Western Machy. Co., San Francisco, Calif.  
 Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.  
 Wisconsin Foundry & Mach. Co., Madison, Wis.

## CRUSHING & SCREENING PLANTS (Portable)

American Pulverizer Co., St. Louis, Mo.  
 Austin-Western Road Machy. Co., Aurora, Ill.  
 Earle C. Bacon, Inc., New York, N. Y.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Blaw-Knox Co., Blawnox, Penna.  
 C. G. Buchanan Co., Inc., New York, N. Y.  
 Diamond Iron Wks., Inc., Minneapolis, Minn.  
 Eagle Crusher Co., Inc., Gallon, O.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.  
 Heltzel Steel Form & Iron Co., Warren, O.  
 Iowa Mfg. Co., Cedar Rapids, Ia.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Link-Belt Co., Chicago, Ill.  
 Lippman Eng. Wks., Milwaukee, Wis.  
 McLanahan & Stone Corp., Hollidaysburg, Penna.  
 Maddox Foundry & Mach. Wks., Inc., Archer, Fla.  
 The Mine & Smelter Supply Co., Denver, Colo.  
 Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
 Productive Equip. Corp., Chicago, Ill.  
 Rogers Iron Wks. Co., Joplin, Mo.  
 Smith Engineering Wks., Milwaukee, Wis.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.  
 Straub Mfg. Co., Oakland, Calif.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 Universal Eng. Corp., Cedar Rapids, Ia.  
 Universal Road Machy. Co., Kingston, N. Y.

# DIRECTORY

Webb Corp., Webb City, Mo.  
Williams Patent Crusher & Pulverizer Co., Madison, Wis.  
Wisconsin Foundry & Mach. Co., Madison, Wis.

**CULVERT PIPE MACHINERY & MOLDS (Concrete)**  
Concrete Pipe Mch. Co., Sioux City, Ia.  
Jackson & Church Co., Saginaw, Mich.  
Lock Joint Pipe Co., E. Orange, N. J.  
Quinn Wire & Iron Wks., Boone, Ia.

**CYPOLAS (Rock Wool)**  
Lancaster Iron Wks., Inc., Lancaster, Penna.  
Superior Body Co., Inc., Marion, Ind.  
Superior Metal Products Co., Inc., Marion, Ind.  
Whiting Corp., Harvey, Ill.

**CURB FORMS (Concrete)**  
Heltzel Steel Form & Iron Co., Warren, O.  
Kirk & Blum Mfg. Co., Cincinnati, O.  
National Steel Prod. Co., Kansas City, Mo.

**CURB REFLECTING DESIGNS (Concrete)**  
Universal Atlas Cement Co., New York, N. Y.

**CURING COMPOUNDS (Concrete)**  
Dewey & Almy Chem. Co., Cambridge, Mass.  
Harshaw Chem. Co., Cleveland, O.  
Michigan Alkali Corp., Detroit, Mich.  
Solvay Sales Corp., New York, N. Y.

**DEDUSTERS**  
Blaw-Knox Co., Blawnox, Penna.  
Northern Blower Co., Cleveland, O.  
Parsons Eng. Corp., Cleveland, O.

**DEHYDRATORS (See also Centrifuge, Thickeners, Etc.)**  
The Dorr Co., Inc., New York, N. Y.  
Eagle Iron Wks., Des Moines, Ia.  
Heil Co., Milwaukee, Wis.  
Link-Belt Co., Chicago, Ill.  
Patterson Foundry & Mach. Co., E. Liverpool, O.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Smith Eng. Wks., Milwaukee, Wis.  
F. L. Smith & Co., New York, N. Y.  
Universal Eng. Corp., Cedar Rapids, Ia.

**DERICKS (Shut-leg & Guy)**  
Dobbie Foundry & Mach. Co., Niagara Falls, N. Y.

**DETONATORS (See Blasting Caps, Blasting Supplies)**

**DEWATERING EQUIPMENT (Sand)**

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
American Cyanamid & Chem. Corp., New York, N. Y. (Explosives Dept.)  
Earle C. Bacon, Inc., New York, N. Y.  
Diamond Iron Wks., Inc., Minneapolis, Minn.  
The Dorr Co., Inc., New York, N. Y.  
Eagle Iron Wks., Des Moines, Ia.  
Erie Pump & Engine Wks., Medina, Penna.  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
Hardinge Co., Inc., York, Penna.  
Iowa Mfg. Co., Cedar Rapids, Ia.  
Jeffrey Mfg. Co., Columbus, O.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Link-Belt Co., Chicago, Ill.  
Meekum Eng. Inc., Chicago, Ill.  
Mine & Smelter Supply Co., Denver, Colo.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Rogers Iron Wks. Co., Joplin, Mo.  
Claude H. Schneible Co., Chicago, Ill.  
Smith Eng. Wks., Milwaukee, Wis.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Straub Mfg. Co., Oakland, Calif.  
Universal Eng. Corp., Cedar Rapids, Ia.  
Webster Mfg., Inc., Tiffin, O.  
F. M. Welch Eng. Service, Greenville, O.  
Western Mch. Co., San Francisco, Calif.

**DIESEL ENGINES (Stationary & Automotive)**  
Atlas Imperial Diesel Engine Co., Oakland, Calif.  
Boliders Co., Inc., New York, N. Y.  
Buckeye Mach. Co., Lima, O.  
Buda Co., Harvey, Ill.

Busch-Sulzer Bros.-Diesel Engine Co., St. Louis, Mo.  
Caterpillar Tractor Co., E. Peoria, Ill.  
Chicago Pneumatic Tool Co., New York, N. Y.  
Clark Bros. Co., Inc., Olean, N. Y.  
Continental Gin Co., Birmingham, Ala.  
Cooper-Bessemer Corp., Mt. Vernon, O.  
Cummins Engine Co., Columbus, Ind.  
Dake Engine Co., Grand Haven, Mich.  
Detroit-Diesel Engine Div.-General Motors Corp., Detroit, Mich.  
Fairbanks, Morse & Co., Chicago, Ill.  
Hercules Motors Corp., Canton, O.  
Ingersoll-Rand Co., New York, N. Y.  
International Harvester Co., Chicago, Ill.  
Murphy Diesel Co., Milwaukee, Wis.  
National Supply Co., Superior Engine Div., Springfield, O.  
Nordberg Mfg. Co., Milwaukee, Wis.  
Orr & Semberow, Inc., Reading, Penna.  
Power Mfg. Co., Marion, O.  
Simplicity System Co., Chattanooga, Tenn.  
Waukesha Motor Co., Waukesha, Wis.  
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Penna.  
Worthington Pump & Mch. Corp., Harrison, N. J.

**DIPPERS (Dredge & Shovel)**  
American Manganese Steel Div., Chicago Heights, Ill.  
C. G. Buchanan Co., Inc., New York, N. Y.  
Bucyrus-Erie Co., S. Milwaukee, Wis.  
Erie Steel Foundry Co., Portland, Ore.  
Frog, Switch & Mfg. Co., Carlisle, Penna.  
General Excavator Co., Marion, O.  
Harnischfeger Corp., Milwaukee, Wis.  
Keystone Driller Co., Beaver Falls, Penna.  
Koehring Co., Milwaukee, Wis.  
Link-Track Eng. Co., Chicago, Ill.  
Meekum Eng. Inc., Chicago, Ill.  
The Osgood Co., Marion, O.  
Pettibone-Mulliken Corp., Chicago, Ill.  
Taylor-Wharton Iron & Steel Co., High Bridge, N. J.

**DISINTEGRATORS (See Crushers, Mills, Pulverizers)**

**DITCHERS**  
Barber Greene Co., Aurora, Ill.  
Bay City Shovels, Inc., Bay City, Mich.  
Buckeye Traction Ditcher Co., Findlay, O.  
Continental Motors Corp., Detroit, Mich.  
Keystone Driller Co., Beaver Falls, Penna.  
Koehring Co., Milwaukee, Wis.  
Lima Locomotive Wks., Inc., Shovel and Crane Div., Lima, O.  
Northwest Eng. Co., Chicago, Ill.  
The Osgood Co., Marion, O.

**DRAGLINE CABLEWAY EXCAVATORS**

American Chain & Cable Co., Inc., Bridgeport, Conn.  
American Hoist & Derrick Co., St. Paul, Minn.  
Beaumont Birch Co., Philadelphia, Penna.  
Blaw-Knox Co., Blawnox, Penna.  
Bucyrus-Erie Co., S. Milwaukee, Wis.  
Columbus Steel Co., San Francisco, Calif. (U. S. Steel Corp. Sub.)  
Continental Motors Corp., Detroit, Mich.  
Erie Steel Construction Co., Erie, Penna.  
General Excavator Co., Marion, O.  
Godfrey Conveyor Co., Elkhart, Ind.  
Hazard Wire Rope Co., Wilkes-Barre, Penna.  
Michigan Power Shovel Co., Benton Harbor, Mich.  
Mine & Smelter Supply Co., Denver, Colo.  
Novo Engine Co., Lansing, Mich.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Sauerman Bros., Inc., Chicago, Ill.

**DRAGLINES**  
American Hoist & Derrick Co., St. Paul, Minn.  
Austin-Western Road Mch. Co., Aurora, Ill.  
Bay City Shovels, Inc., Bay City, Mich.  
Beaumont Birch Co., Philadelphia, Penna.

Bethlehem Steel Co., Bethlehem, Penna.  
Browning Crane & Shovel Co., Cleveland, O.  
Buckeye Traction Ditcher Co., Findlay, O.  
Bucyrus-Erie Co., S. Milwaukee, Wis.  
Byers Mach. Co., Ravenna, O.  
Diamond Iron Wks., Inc., Minneapolis, Minn.  
Godfrey Conveyor Co., Elkhart, Ind.  
Harnischfeger Corp., Milwaukee, Wis.  
Keystone Driller Co., Beaver Falls, Penna.  
Koehring Co., Milwaukee, Wis.  
Lima Locomotive Wks., Inc., Shovel and Crane Div., Lima, O.  
Link-Belt Speeder Corp., Chicago, Ill.  
Manitowoc Eng. Wks., Manitowoc, Wis.  
Marion Steam Shovel Co., Marion, Ind.  
Mine & Smelter Supply Co., Denver, Colo.  
Northwest Eng. Co., Chicago, Ill.  
The Osgood Co., Marion, O.  
Page Eng. Co., Chicago, Ill.  
Sauerman Bros., Inc., Chicago, Ill.  
Sullivan Mch. Co., Michigan City, Ind.  
The Thew Shovel Co., Lorain, O.  
Wickwire Spencer Steel Co., New York, N. Y.

**DRAGS (Sand)**  
American Manganese Steel Div., Chicago Heights, Ill.  
Eagle Iron Wks., Des Moines, Ia.  
Greenville Mfg. Wks., Greenville, O.  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
Jeffrey Mfg. Co., Columbus, O.  
Link-Belt Co., Chicago, Ill.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
Mine & Smelter Supply Co., Denver, Colo.  
Rogers Iron Wks. Co., Joplin, Mo.  
Smith Eng. Wks., Milwaukee, Wis.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Straub Mfg. Co., Oakland, Calif.  
Universal Eng. Corp., Cedar Rapids, Ia.  
Western Mch. Co., San Francisco, Calif.

**DRAIN TILE MACHINES (Concrete)**  
Concrete Equipment Co., Holland, Mich.  
Concrete Pipe Mch. Co., Sioux City, Ia.

**DREDGE PIPE AND SLEEVES**  
American Manganese Steel Div., Chicago Heights, Ill.  
American Rolling Mill Co., Middletown, O.  
American Steel Dredge Co., Inc., Fort Wayne, Ind.  
Cincinnati Rubber Mfg. Co., Cincinnati, O.  
Gates Rubber Co., Denver, Colo.  
Goodall Rubber Co., Inc., Philadelphia, Penna.  
B. F. Goodrich Co., Akron, O.  
Hetherington & Berner, Inc., Indianapolis, Ind.  
Kensington Steel Co., Chicago, Ill.  
Lancaster Iron Wks., Inc., Lancaster, Penna.  
Manganese Steel Forge Co., Philadelphia, Penna.  
Manhattan Rubber Co., Passaic, N. J.  
Morris Mach. Wks., Baldwinville, N. Y.

**DREDGE PUMPS**  
American Manganese Steel Div., Chicago Heights, Ill.  
American-Marsh Pumps, Inc., Battle Creek, Mich.  
American Steel Dredge Co., Inc., Fort Wayne, Ind.  
American Well Wks., Aurora, Ill.  
W. H. K. Bennett Co., Chicago, Ill.  
Birdsboro Steel Foundry & Mach. Co., Birdsboro, Penna.  
C. G. Buchanan Co., Inc., New York, N. Y.  
Bucyrus-Erie Co., S. Milwaukee, Wis.  
Climax Eng. Co., Chicago, Ill.  
Eagle Hoist & Pump Co., Lansing, Mich.  
Erie Pump & Engine Wks., Medina, Penna.  
Georgia Iron Wks. Augusta, Ga.  
Kansas City Hay Press Co., Kansas City, Mo.  
Lawrence Mach. & Pump Corp., Lawrence, Mass.  
Maddox Foundry & Mach. Wks., Inc., Archer, Fla.  
Meekum Eng. Inc., Chicago, Ill.  
Morris Mach. Wks., Baldwinville, N. Y.  
Peker Iron Wks., Columbus, Ga.  
Pettibone-Mulliken Corp., Chicago, Ill.

Sterling Mach. Corp., Kansas City, Mo.  
Victor Equip. Co., San Francisco, Calif.

**DREDGES (Sand and Gravel)**  
American Hoist & Derrick Co., St. Paul, Minn.  
American Manganese Steel Div., Chicago Heights, Ill.  
American Steel Dredge Co., Inc., Fort Wayne, Ind.  
Bethlehem Steel Co., Bethlehem, Penna.  
Bodinson Mfg. Co., San Francisco, Calif.  
C. G. Buchanan Co., Inc., New York, N. Y.  
Bucyrus-Erie Co., S. Milwaukee, Wis.  
Eagle Iron Wks., Des Moines, Ia.  
Ellicott Mach. Corp., Baltimore, Md.  
Greenville Mfg. Wks., Greenville, O.  
Hetherington & Berner, Inc., Indianapolis, Ind.  
Lawrence Mach. & Pump Corp., Lawrence, Mass.  
Meekum Eng. Inc., Chicago, Ill.  
Morris Mach. Wks., Baldwinville, N. Y.  
Straub Mfg. Co., Oakland, Calif.  
F. M. Welch Eng. Service, Greenville, O.

**DRILL BITS (Detachable)**  
Chicago Pneumatic Tool Co., New York, N. Y.  
Gardner-Denver Co., Quincy, Ill.  
Hardsoc Wonder Drill Co., Ottumwa, Ia.  
Independent Pneumatic Tool Co., Chicago, Ill.  
Ingersoll-Rand Co., New York, N. Y.  
Keystone Driller Co., Beaver Falls, Penna.  
The Loomis Mach. Co., Tiffin, O.  
Mine & Smelter Supply Co., Denver, Colo.  
St. Pierre Chain Corp., Worcester, Mass.  
Schramm, Inc., West Chester, Penna.  
Sullivan Mach. Co., Michigan City, Ind.  
Timken Roller Bearing Co., Canton, O.  
Western Mach. Co., San Francisco, Calif.

**DRILL SHARPENING MACHINES**  
Alloy & Steel & Metals Co., Los Angeles, Calif.  
Bucyrus-Erie Co., S. Milwaukee, Wis.  
Gardner-Denver Co., Quincy, Ill.  
Hardsoc Wonder Drill Co., Ottumwa, Ia.  
Ingersoll-Rand Co., New York, N. Y.  
Mine & Smelter Supply Co., Denver, Colo.  
Western Mch. Co., San Francisco, Calif.

**DRILL STEEL**  
Bethlehem Steel Co., Bethlehem, Penna.  
Bucyrus-Erie Co., S. Milwaukee, Wis.  
Chicago Pneumatic Tool Co., New York, N. Y.  
Cleveland Rock Drill Co., Cleveland, O.  
Crucible Steel Co. of America, New York, N. Y.  
Gardner-Denver Co., Quincy, Ill.  
Hardsoc Wonder Drill Co., Ottumwa, Ia.  
Independent Pneumatic Tool Co., Chicago, Ill.  
Ingersoll-Rand Co., New York, N. Y.  
Mine & Smelter Supply Co., Denver, Colo.  
Schramm, Inc., West Chester, Penna.  
Sullivan Mch. Co., Michigan City, Ind.  
Western Mch. Co., San Francisco, Calif.  
Worthington Pump & Mch. Corp., Harrison, N. J.

**DRILLING ACCESSORIES**  
Bucyrus-Erie Co., S. Milwaukee, Wis.  
Chicago Pneumatic Tool Co., New York, N. Y.  
Cleveland Rock Drill Co., Cleveland, O.  
Ingersoll-Rand Co., New York, N. Y.  
Keystone Driller Co., Beaver Falls, Penna.  
The Loomis Mach. Co., Tiffin, O.  
The Star Drilling Mach. Co., Akron, O.  
Sullivan Mch. Co., Michigan City, Ind.  
Western Mch. Co., San Francisco, Calif.  
Worthington Pump & Mch. Corp., Harrison, N. J.

# DIRECTORY

**DRILLS (Pneumatic, Rock)**  
Chicago Pneumatic Tool Co., New York, N. Y.  
Cleveland Rock Drill Co., Cleveland, O.  
Cochise Rock Drill Mfg. Co., Los Angeles, Calif.  
Gardner-Denver Co., Quincy, Ill.  
Hardsong Wonder Drill Co., Ottumwa, Ia.  
Hossfeld Mfg. Co., Winona, Minn.  
Independent Pneumatic Tool Co., Chicago, Ill.  
Ingersoll-Rand Co., New York, N. Y.  
Jeffrey Mfg. Co., Columbus, O.  
E. J. Longyear Co., Minneapolis, Minn.  
Mine & Smelter Supply Co., Denver, Colo.  
St. Pierre Chain Corp., Worcester, Mass.  
Sullivan Mch. Co., Michigan City, Ind.  
Western Mch. Co., San Francisco, Calif.  
Worthington Pump & Mch. Corp., Harrison, N. J.

**DRILLS (Well or Blast-Hole)**  
Bucyrus-Erie Co., S. Milwaukee, Wis.  
Electric Wheel Co., Quincy, Ill.  
Gardner-Denver Co., Quincy, Ill.  
Ingersoll-Rand Co., New York, N. Y.  
Keystone Driller Co., Beaver Falls, Penna.  
The Loomis Mach. Co., Tiffin, O.  
Sanderson Cyclone Drill Co., Orrville, O.  
Star Drilling Mach. Co., Akron, O.  
Sullivan Mach. Co., Michigan City, Ind.

**DRIVES (Belt, Chain Rope & V-Belt)**  
Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Earle C. Bacon, Inc., New York, N. Y.  
Bodinson Mfg. Co., San Francisco, Calif.  
Browning Mfg. Co., Mayaville, Ky.  
Chain Belt Co., Marion, O.  
Gates Rubber Co., Denver, Colo.  
Godfrey Conveyor Co., Elkhart, Ind.  
George Haiss Mfg. Co., New York, N. Y.  
E. F. Houghton & Co., Philadelphia, Penna.  
Jeffrey Mfg. Co., Columbus, O.  
W. A. Jones Foundry & Mach. Co., Chicago, Ill.  
Link-Belt Co., Indianapolis, Ind.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
The McNally-Pittsburg Mfg. Corp., Pittsburg, Kans.  
Medart Co., St. Louis, Mo.  
Mine & Smelter Supply Co., Denver, Colo.  
Prater Pulverizer Co., Chicago, Ill.  
Rockwood Mfg. Co., Indianapolis, Ind.  
Simplicity System Co., Chattanooga, Tenn.  
Sprout, Waldron & Co., Muncy, Penna.  
Standard Transmission Equip. Co., Los Angeles, Calif.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Thermoid Rubber Co., Trenton, N. J.  
United States Rubber Co., New York, N. Y.  
Western Mch. Co., San Francisco, Calif.  
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Penna.  
T. B. Wood's Sons Co., Chambersburg, Penna.  
Worthington Pump & Mch. Corp., Harrison, N. J.

**DRIVES (Short-Center)**  
Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Earle C. Bacon, Inc., New York, N. Y.  
Bodinson Mfg. Co., San Francisco, Calif.  
Browning Mfg. Co., Mayaville, Ky.  
Chicago Belting Co., Chicago, Ill.  
Conveyor Co., Inc., Los Angeles, Calif.  
Dodge Mfg. Corp., Mishawaka, Ind.  
Gates Rubber Co., Denver, Colo.  
E. F. Houghton & Co., Philadelphia, Penna.  
D. O. James Mfg. Co., Chicago, Ill.  
Link-Belt Co., Indianapolis, Ind.  
J. E. Rhoads & Sons, Philadelphia, Penna.

Rockwood Mfg. Co., Indianapolis, Ind.  
F. L. Smith & Co., New York, N. Y.  
Western Mch. Co., San Francisco, Calif.

**DRYERS**  
Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Babcock & Wilcox Co., New York, N. Y.  
Barber-Greene Co., Aurora, Ill.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Blaw-Knox Co., Blawnox, Penna.  
Bodinson Mfg. Co., San Francisco, Calif.  
Bonnot Co., Canton, O.  
L. B. Christie Co., New York, N. Y.  
Colorado Iron Wks. Co., Denver, Colo.  
Combustion Eng. Corp., Chicago, Ill.  
Diamond Iron Wks., Inc., Minneapolis, Minn.  
Hardinge Co., Inc., York, Penna.  
Hetherington & Berner, Inc., Indianapolis, Ind.  
Iowa Mfg. Co., Cedar Rapids, Ia.  
Jackson & Church Co., Saginaw, Mich.  
Jeffrey Mfg. Co., Columbus, O.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Lancaster Iron Wks., Inc., Lancaster, Penna.  
Lewistown Foundry & Mach. Co., Lewistown, Penna.  
Lime & Hydrate Plants Co., York, Penna.  
Link-Belt Co., Chicago, Ill.  
Louisville Drying Mch. Co., Inc., Louisville, Ky.  
McCarter Iron Wks., Inc., Norristown, Penna.  
McDermott Bros. Co., Allentown, Penna.  
McGann Mfg. Co., Inc., York, Penna.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
Manitowoc Eng. Wks., Manitowoc, Wis.  
Mine & Smelter Supply Co., Denver, Colo.  
National Steel Prod. Co., Kansas City, Mo.  
Patterson Foundry & Mach. Co., E. Liverpool, O.  
Raymond Pulverizer Co., Chicago, Ill.  
Ruggles-Coles Eng. Co., New York, N. Y.  
Simplicity System Co., Chattanooga, Tenn.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
United States Mch. Co., Inc., New York, N. Y.  
Vulcan Iron Wks., Wilkes-Barre, Penna.  
Warren Bros. Roads Co., Cambridge, Mass.  
Western Mch. Co., San Francisco, Calif.  
Western Precipitation Corp., Los Angeles, Calif.

**DUST COLLECTING EQUIPMENT**  
Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
American Blower Corp., Detroit, Mich.  
American Foundry Equip. Co., Mishawaka, Ind.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Blaw-Knox Co., Blawnox, Penna.  
Buell Eng. Co., Inc., New York, N. Y.  
By-Products Recoveries, Inc., New York, N. Y.  
Clark Dust Control Co., Chicago, Ill.  
Continental Gin Co., Birmingham, Ala.  
Draco Corp., Cleveland, O.  
Holly Pneumatic Systems, Inc., New York, N. Y.  
Iowa Mfg. Co., Cedar Rapids, Ia.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Korb-Pettit Wire Fabrics & Iron Wks., Inc., Philadelphia, Penna.  
Lime & Hydrate Plants Co., York, Penna.  
Markley Dust Control System, Inc., Mamaronock, N. Y.  
National Steel Prod. Co., Kansas City, Mo.  
Northern Blower Co., Cleveland, O.  
Pangborn Corp., Hagerstown, Md.  
Parsons Eng. Corp., Cleveland, O.  
Prat-Daniel Corp., E. Port Chester, N. Y.  
Research Corp., New York, N. Y.  
Rumeltn Mfg. Co., Milwaukee, Wis.  
Claude B. Schneible Co., Chicago, Ill.  
Simplicity System Co., Chattanooga, Tenn.  
W. W. Sly Mfg. Co., Cleveland, O.  
B. F. Sturtevant Co., Boston, Mass.  
Union Iron Wks., Erie, Penna.

Warren Bros. Roads Co., Cambridge, Mass.  
Webber Equipment Co., New York, N. Y.  
Western Precipitation Corp., Los Angeles, Calif.  
Whiting Corp., Harvey, Ill.  
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

**DUST COLLECTOR STACKS**  
American Foundry Equip. Co., Mishawaka, Ind.  
Connecticut Blower Co., Hartford, Conn.  
Grundler Crusher & Pulverizer Co., St. Louis, Mo.  
National Steel Prod. Co., Kansas City, Mo.  
Northern Blower Co., Cleveland, O.  
Parsons Eng. Corp., Cleveland, O.  
Prat-Daniel Corp., E. Port Chester, N. Y.

**DUST CONVEYING SYSTEMS (See Air Conveyors)**

**DYNAMITE AND BLASTING EXPLOSIVES**  
American Cyanamid & Chemical Corp. (Explosives Dept.), New York, N. Y.  
Atlas Powder Co., Wilmington, Dela.  
E. I. du Pont de Nemours & Co., Wilmington, Dela.  
Hercules Powder Co., Wilmington, Dela.  
Illinois Powder Mfg. Co., St. Louis, Mo.  
Independent Explosives Co., Cleveland, O.  
National Powder Co., Eldred, Penna.  
Trojan Powder Co., Allentown, Penna.

**ELECTRIC MOTORS**  
Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Burke Electric Co., Erie, Penna.  
Century Electric Co., St. Louis, Mo.  
Electric Mch. Mfg. Co., Minneapolis, Minn.  
Fairbanks, Morse & Co., Chicago, Ill.  
The Falk Corp., Milwaukee, Wis.  
General Electric Co., Schenectady, N. Y.  
Henschelger Corp., Milwaukee, Wis.  
Lincoln Electric Co., Cleveland, O.  
Mine & Smelter Supply Co., Denver, Colo.  
Reliance Electric & Eng. Co., Cleveland, O.  
U. S. Electrical Motors, Inc., Los Angeles, Calif.  
Wagner Electric Corp., St. Louis, Mo.  
Western Mch. Co., San Francisco, Calif.  
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Penna.

**ELECTRODES (Welding) (See Welding Electrodes)**

**ELEVATORS (Chain or Belt & Bucket)**  
Alpha Tank & Sheet Metal Mfg. Co., St. Louis, Mo.  
Anchor Concrete Mch. Co., Columbus, O.  
Austin-Western Road Mch. Co., Aurora, Ill.  
Earle C. Bacon, Inc., New York, N. Y.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Beaumont Birch Co., Philadelphia, Penna.  
Brady Conveyors Corp., Chicago, Ill.  
L. Burmeister Co., Milwaukee, Wis.  
Butler Bin Co., Waukesha, Wis.  
Chain Belt Co., Milwaukee, Wis.  
The Columbus Conveyor Co., Columbus, O.  
Continental Gin Co., Birmingham, Ala.  
Conveyor Co., Inc., Los Angeles, Calif.  
Diamond Iron Wks., Inc., Minneapolis, Minn.  
Dodge Mfg. Corp., Mishawaka, Ind.  
Fairfield Eng. Co., Marion, O.  
General Conveyor & Mfg. Co., St. Louis, Mo.  
Godfrey Conveyor Co., Elkhart, Ind.  
Greenville Mfg. Wks., Greenville, O.  
B. F. Gump Co., Chicago, Ill.  
George Haiss Mfg. Co., New York, N. Y.  
Robert Holmes & Bros., Inc., Danville, Ill.  
Huron Industries, Inc., Alpena, Mich.  
Industrial Brownhoist Corp., Bay City, Mich.  
Jeffrey Mfg. Co., Columbus, O.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Kensington Steel Co., Chicago, Ill.  
Lewis-Shepard Sales Corp., Watertown, Mass.

Lewiston Foundry & Mach. Co., Lewiston, Penna.  
Link-Belt Co., Indianapolis, Ind.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
Maddox Foundry & Mach. Wks., Inc., Archer, Fla.  
Miles Mfg. Co., Jackson, Mich.  
Mine & Smelter Supply Co., Denver, Colo.  
National Malleable & Steel Castings Co., Cleveland, O.  
National Steel Prod. Co., Kansas City, Mo.  
The Neff and Fry Co., Camden, O.  
New Holland Mach. Co., New Holland, Penna.  
Palmer-Hee Co., Detroit, Mich.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Ransome Concrete Mch. Co., Dunellen, N. J.  
Robins Conveying Belt Co., Passaic, N. J.  
Screw Conveyor Corp., Hammond, Ind.  
Simplicity System Co., Chattanooga, Tenn.  
Smith Eng. Wks., Milwaukee, Wis.  
Sprout, Waldron & Co., Muncy, Penna.  
Stearns Mfg. Co., Inc., Adrian, Mich.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Sturtevant Mill Co., Dorchester, Mass.  
Thermoid Rubber Co., Trenton, N. J.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Universal Road Mch. Co., Kingsport, N. Y.  
Webb City & Carterville Foundry & Mach. Wks., Webb City, Mo.  
The Webb Corp., Webb City, Mo.  
Webster Mfg. Co., Inc., Tiffin, O.  
Welch, F. M., Eng. Service, Greenville, O.  
Western Mch. Co., San Francisco, Calif.  
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.  
Wisconsin Foundry & Mach. Co., Madison, Wis.

**ENGINEERING SERVICE (Consulting & Designing)**

American Steel Dredge Co., Inc., Fort Wayne, Ind.  
Arnold & Son, Woodville, O.  
Earle C. Bacon, Inc., New York, N. Y.  
Blaw-Knox Co., Blawnox, Penna.  
C. G. Buchanan Co., Inc., New York, N. Y.  
Burrell Eng. & Construction Co., Chicago, Ill.  
Church Eng. Co., Inc., Cincinnati, O.  
Connecticut Blower Co., Hartford, Conn.  
Conveyor Co., Inc., Los Angeles, Calif.  
The Dorr Co., Inc., New York, N. Y.  
Eagle Iron Wks., Des Moines, Ia.  
Galigher Co., Salt Lake City, Utah.  
Garlinghouse Bros., Los Angeles, Calif.  
Godfrey Conveyor Co., Elkhart, Ind.  
Greenville Mfg. Wks., Greenville, O.  
Gruender Crusher & Pulverizer Co., St. Louis, Mo.  
Hardinge Co., Inc., York, Penna.  
Hetzl Steel Form & Iron Co., Warren, O.  
Hetherington & Berner, Inc., Indianapolis, Ind.  
Robert Holmes & Bros., Inc., Danville, Ill.  
Jackson & Church Co., Saginaw, Mich.  
Jeffrey Mfg. Co., Columbus, O.  
Kennedy-Van Saun Mfg. Corp., New York, N. Y.  
Lancaster Iron Wks., Inc., Lancaster, Penna.  
Lime & Hydrate Plants Co., York, Penna.  
Link-Belt Co., Chicago, Ill.  
Long, M. A. Co., Baltimore, Md.  
E. J. Longyear Co., Minneapolis, Minn.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
MacDonald Eng. Co., Chicago, Ill.  
Meckum Eng., Inc., Chicago, Ill.  
Medart Co., St. Louis, Mo.  
Patterson Foundry & Mach. Co., E. Liverpool, O.  
Ritter Prod. Corp., Rochester, N. Y.  
Scientific Concrete Service Corp., Elizabeth, N. J.  
Separations Eng. Corp., New York, N. Y.  
Smith Eng. Wks., Milwaukee, Wis.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Sturtevant Mill Co., Dorchester, Mass.  
Thompson & Lichtner Co., Inc., Boston, Mass.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
United States Mch. Co., Inc., New York, N. Y.

# DIRECTORY

The Webb Corp., Webb City, Mo.  
Webster Mfg. Inc., Tiffin, O.  
H. W. Welmer Co., Milwaukee, Wis.  
Welch, F. M., Eng. Service, Greenville, O.  
Western Mch. Co., San Francisco, Calif.  
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.  
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.  
R. D. Wood & Co., Philadelphia, Penna.

## ENGINES (Diesel) (See Diesel Engines)

## ENGINES (Gasoline) (See Gasoline Engines)

## ENGINES (Kerosene, Oil)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Buda Co., Harvey, Ill.  
Clark Bros. Co., Inc., Olean, N. Y.  
Climax Eng. Co., Chicago, Ill.  
Continental Gin Co., Birmingham, Ala.  
Continental Motors Corp., Detroit, Mich.  
Dake Engine Co., Grand Haven, Mich.  
Fairbanks, Morse & Co., Chicago, Ill.  
Hercules Motors Corp., Canton, O.  
Minneapolis-Moline Power Implement Co., Minneapolis, Minn.  
New Holland Mach. Co., New Holland, Penna.  
Novo Engine Co., Lansing, Mich.  
Orr & Sember, Inc., Reading, Penna.  
Power Mfg. Co., Marion, O.  
Weber Engine Co., Kansas City, Mo.  
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.  
Wilson, K. R., Buffalo, N. Y.  
Wisconsin Motor Corp., Milwaukee, Wis.  
Worthington Pump & Mch. Corp., Harrison, N. J.

## ENGINES (Steam)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Dake Engine Co., Grand Haven, Mich.  
Ellicott Mach. Corp., Baltimore, Md.  
Morris Mach. Wks., Baldwinsville, N. Y.  
Nordberg Mfg. Co., Milwaukee, Wis.

## EXCAVATORS (Cableway Dragline) (See Cable Excavators)

## EXCAVATORS (Clamshell) (See Cranes)

## EXCAVATORS (Scraper) (See Scraper Excavator)

## EXCAVATORS (Tower) (See Cable Excavators)

## EXPLOSIVES (See Dynamite)

## FANS & BLOWERS

Abbe Eng. Co., New York, N. Y.  
Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
American Blower Corp., Detroit, Mich.  
Bayley Blower Co., Milwaukee, Wis.  
Blaw-Knox Co., Blawnox, Penna.  
Connecticut Blower Co., Hartford, Conn.  
Continental Gin Co., Birmingham, Ala.  
Coppus Engineering Corp., Worcester, Mass.  
De Laval Steam Turbine Co., Trenton, N. J.  
Diamond Iron Wks., Inc., Minneapolis, Minn.  
Heil Co., Milwaukee, Wis.  
Ingersoll-Rand Co., New York, N. Y.  
Jeffrey Mfg. Co., Columbus, O.  
Kennedy-Van Saun Mfg. Corp., New York, N. Y.  
The Loomis Mach. Co., Tiffin, O.  
Mine & Smelter Supply Co., Denver, Colo.  
Northern Blower Co., Cleveland, O.  
Pangborn Corp., Hagerstown, Md.  
Parsons Eng. Corp., Cleveland, O.  
Roots-Connorsville Blower Corp., Connorsville, Ind.  
The Simplicity System Co., Chattanooga, Tenn.  
H. P. Sturtevant Co., Boston, Mass.  
Truck Equipment Co., Inc., Buffalo, N. Y.  
Western Mch. Co., San Francisco, Calif.  
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.  
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

## FILTER CLOTH (Slurry Filters)

Elmco Corp., Salt Lake City, Utah  
Filter Media Co., Irvington-on-Hudson, N. Y.  
John A. Roebbing's Sons Co., Trenton, N. J.  
W. S. Tyler Co., Cleveland, O.

## FILTERS (Cement Slurry)

Bird Mach. Co., South Walpole, Mass.  
Elmco Corp., Salt Lake City, Utah  
Filter Media Co., Irvington-on-Hudson, N. Y.

## FIRE BRICK (Kiln Liners, Etc.)

Babcock & Wilcox Co., New York, N. Y.  
Bottfield Refractories Co., Philadelphia, Penna.  
Carborundum Co., Niagara Falls, N. Y.

## FEEDERS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
American Manganese Steel Div., Chicago Heights, Ill.  
Anchor Concrete Mch. Co., Columbus, O.  
Arnold & Weigel, Inc., Woodville, O.  
Babcock & Wilcox Co., New York, N. Y.  
Earle C. Bacon, Inc., New York, N. Y.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Blaw-Knox Co., Blawnox, Penna.  
Bonnot Co., Canton, O.  
Bradley Pulverizer Co., Allentown, Penna.  
H. Brewer & Co., Tecumseh, Mich.  
The Columbus Conveyor Co., Columbus, O.  
Concrete Equip. Co., Holland, Mich.  
Continental Gin Co., Birmingham, Ala.  
Deister Concentrator Co., Ft. Wayne, Ind.  
Diamond Iron Wks., Inc., Minneapolis, Minn.  
Ellerman Co., Salt Lake City, Utah  
Erie Steel Construction Co., Erie, Penna.  
Fallfield Eng. Co., Marion, O.  
Fuller Co., Catsaqua, Penna.  
Galigher Co., Salt Lake City, Utah  
Greenville Mfg. Wks., Greenville, O.  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
B. F. Gump Co., Chicago, Ill.  
Hardinge Co., Inc., York, Penna.  
Hetherington & Berner, Inc., Indianapolis, Ind.  
Huron Industries, Inc., Alpena, Mich.  
Iowa Mfg. Co., Cedar Rapids, Ia.  
Jeffrey Mfg. Co., Columbus, O.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Kensington Steel Co., Chicago, Ill.  
The Kent Mach. Co., Cuyahoga Falls, O.  
Link-Belt Co., Chicago, Ill.  
Link-Track Eng. Co., Chicago, Ill.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
McNally - Pittsburgh Mfg. Corp., Pittsburgh, Kansas.  
Manitowoc Eng. Wks., Manitowoc, Wis.  
Merrick Scale Mfg. Co., Passaic, N. J.  
Miles Mfg. Co., Jackson, Mich.  
Mine & Smelter Supply Co., Denver, Colo.  
Pennsylvania Crusher Co., Philadelphia, Penna.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Richardson Scale Co., Clifton, N. J.  
Hiddell, W. A., Corp., Bucyrus, O.  
Robbins Conveying Belt Co., Passaic, N. J.  
Rogers Iron Wks. Co., Joplin, Mo.  
Ross Screen & Feeder Co., New York, N. Y.  
Schaffer Poldometer Co., Pittsburgh, Penna.  
Screw Conveyor Corp., Hammond, Ind.  
Simplicity System Co., Chattanooga, Tenn.  
Smith Eng. Wks., Milwaukee, Wis.  
F. L. Smith & Co., New York, N. Y.  
Stearns Mfg. Co., Inc., Adrian, Mich.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Straub Mfg. Co., Oakland, Calif.  
Syntrol Co., Homer City, Penna.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Universal Eng. Corp., Cedar Rapids, Ia.  
Webster Mfg., Inc., Tiffin, O.  
Western Mch. Co., San Francisco, Calif.  
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.  
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.  
Wisconsin Foundry & Mach. Co., Madison, Wis.

Continental Gin Co., Birmingham, Ala.  
Deister Concentrator Co., Ft. Wayne, Ind.  
Diamond Iron Wks., Inc., Minneapolis, Minn.  
Ellerman Co., Salt Lake City, Utah  
Erie Steel Construction Co., Erie, Penna.  
Fallfield Eng. Co., Marion, O.  
Fuller Co., Catsaqua, Penna.  
Galigher Co., Salt Lake City, Utah  
Greenville Mfg. Wks., Greenville, O.  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
B. F. Gump Co., Chicago, Ill.  
Hardinge Co., Inc., York, Penna.  
Hetherington & Berner, Inc., Indianapolis, Ind.  
Huron Industries, Inc., Alpena, Mich.  
Iowa Mfg. Co., Cedar Rapids, Ia.  
Jeffrey Mfg. Co., Columbus, O.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Kensington Steel Co., Chicago, Ill.  
The Kent Mach. Co., Cuyahoga Falls, O.  
Link-Belt Co., Chicago, Ill.  
Link-Track Eng. Co., Chicago, Ill.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
McNally - Pittsburgh Mfg. Corp., Pittsburgh, Kansas.  
Manitowoc Eng. Wks., Manitowoc, Wis.  
Merrick Scale Mfg. Co., Passaic, N. J.  
Miles Mfg. Co., Jackson, Mich.  
Mine & Smelter Supply Co., Denver, Colo.  
Pennsylvania Crusher Co., Philadelphia, Penna.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Richardson Scale Co., Clifton, N. J.  
Hiddell, W. A., Corp., Bucyrus, O.  
Robbins Conveying Belt Co., Passaic, N. J.  
Rogers Iron Wks. Co., Joplin, Mo.  
Ross Screen & Feeder Co., New York, N. Y.  
Schaffer Poldometer Co., Pittsburgh, Penna.  
Screw Conveyor Corp., Hammond, Ind.  
Simplicity System Co., Chattanooga, Tenn.  
Smith Eng. Wks., Milwaukee, Wis.  
F. L. Smith & Co., New York, N. Y.  
Stearns Mfg. Co., Inc., Adrian, Mich.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Straub Mfg. Co., Oakland, Calif.  
Syntrol Co., Homer City, Penna.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Universal Eng. Corp., Cedar Rapids, Ia.  
Webster Mfg., Inc., Tiffin, O.  
Western Mch. Co., San Francisco, Calif.  
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.  
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.  
Wisconsin Foundry & Mach. Co., Madison, Wis.

Continental Gin Co., Birmingham, Ala.  
Deister Concentrator Co., Ft. Wayne, Ind.  
Diamond Iron Wks., Inc., Minneapolis, Minn.  
Ellerman Co., Salt Lake City, Utah  
Erie Steel Construction Co., Erie, Penna.  
Fallfield Eng. Co., Marion, O.  
Fuller Co., Catsaqua, Penna.  
Galigher Co., Salt Lake City, Utah  
Greenville Mfg. Wks., Greenville, O.  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
B. F. Gump Co., Chicago, Ill.  
Hardinge Co., Inc., York, Penna.  
Hetherington & Berner, Inc., Indianapolis, Ind.  
Huron Industries, Inc., Alpena, Mich.  
Iowa Mfg. Co., Cedar Rapids, Ia.  
Jeffrey Mfg. Co., Columbus, O.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Kensington Steel Co., Chicago, Ill.  
The Kent Mach. Co., Cuyahoga Falls, O.  
Link-Belt Co., Chicago, Ill.  
Link-Track Eng. Co., Chicago, Ill.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
McNally - Pittsburgh Mfg. Corp., Pittsburgh, Kansas.  
Manitowoc Eng. Wks., Manitowoc, Wis.  
Merrick Scale Mfg. Co., Passaic, N. J.  
Miles Mfg. Co., Jackson, Mich.  
Mine & Smelter Supply Co., Denver, Colo.  
Pennsylvania Crusher Co., Philadelphia, Penna.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Richardson Scale Co., Clifton, N. J.  
Hiddell, W. A., Corp., Bucyrus, O.  
Robbins Conveying Belt Co., Passaic, N. J.  
Rogers Iron Wks. Co., Joplin, Mo.  
Ross Screen & Feeder Co., New York, N. Y.  
Schaffer Poldometer Co., Pittsburgh, Penna.  
Screw Conveyor Corp., Hammond, Ind.  
Simplicity System Co., Chattanooga, Tenn.  
Smith Eng. Wks., Milwaukee, Wis.  
F. L. Smith & Co., New York, N. Y.  
Stearns Mfg. Co., Inc., Adrian, Mich.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Straub Mfg. Co., Oakland, Calif.  
Syntrol Co., Homer City, Penna.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Universal Eng. Corp., Cedar Rapids, Ia.  
Webster Mfg., Inc., Tiffin, O.  
Western Mch. Co., San Francisco, Calif.  
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.  
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.  
Wisconsin Foundry & Mach. Co., Madison, Wis.

Continental Gin Co., Birmingham, Ala.  
Deister Concentrator Co., Ft. Wayne, Ind.  
Diamond Iron Wks., Inc., Minneapolis, Minn.  
Ellerman Co., Salt Lake City, Utah  
Erie Steel Construction Co., Erie, Penna.  
Fallfield Eng. Co., Marion, O.  
Fuller Co., Catsaqua, Penna.  
Galigher Co., Salt Lake City, Utah  
Greenville Mfg. Wks., Greenville, O.  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
B. F. Gump Co., Chicago, Ill.  
Hardinge Co., Inc., York, Penna.  
Hetherington & Berner, Inc., Indianapolis, Ind.  
Huron Industries, Inc., Alpena, Mich.  
Iowa Mfg. Co., Cedar Rapids, Ia.  
Jeffrey Mfg. Co., Columbus, O.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Kensington Steel Co., Chicago, Ill.  
The Kent Mach. Co., Cuyahoga Falls, O.  
Link-Belt Co., Chicago, Ill.  
Link-Track Eng. Co., Chicago, Ill.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
McNally - Pittsburgh Mfg. Corp., Pittsburgh, Kansas.  
Manitowoc Eng. Wks., Manitowoc, Wis.  
Merrick Scale Mfg. Co., Passaic, N. J.  
Miles Mfg. Co., Jackson, Mich.  
Mine & Smelter Supply Co., Denver, Colo.  
Pennsylvania Crusher Co., Philadelphia, Penna.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Richardson Scale Co., Clifton, N. J.  
Hiddell, W. A., Corp., Bucyrus, O.  
Robbins Conveying Belt Co., Passaic, N. J.  
Rogers Iron Wks. Co., Joplin, Mo.  
Ross Screen & Feeder Co., New York, N. Y.  
Schaffer Poldometer Co., Pittsburgh, Penna.  
Screw Conveyor Corp., Hammond, Ind.  
Simplicity System Co., Chattanooga, Tenn.  
Smith Eng. Wks., Milwaukee, Wis.  
F. L. Smith & Co., New York, N. Y.  
Stearns Mfg. Co., Inc., Adrian, Mich.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Straub Mfg. Co., Oakland, Calif.  
Syntrol Co., Homer City, Penna.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Universal Eng. Corp., Cedar Rapids, Ia.  
Webster Mfg., Inc., Tiffin, O.  
Western Mch. Co., San Francisco, Calif.  
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.  
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.  
Wisconsin Foundry & Mach. Co., Madison, Wis.

Continental Gin Co., Birmingham, Ala.  
Deister Concentrator Co., Ft. Wayne, Ind.  
Diamond Iron Wks., Inc., Minneapolis, Minn.  
Ellerman Co., Salt Lake City, Utah  
Erie Steel Construction Co., Erie, Penna.  
Fallfield Eng. Co., Marion, O.  
Fuller Co., Catsaqua, Penna.  
Galigher Co., Salt Lake City, Utah  
Greenville Mfg. Wks., Greenville, O.  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
B. F. Gump Co., Chicago, Ill.  
Hardinge Co., Inc., York, Penna.  
Hetherington & Berner, Inc., Indianapolis, Ind.  
Huron Industries, Inc., Alpena, Mich.  
Iowa Mfg. Co., Cedar Rapids, Ia.  
Jeffrey Mfg. Co., Columbus, O.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Kensington Steel Co., Chicago, Ill.  
The Kent Mach. Co., Cuyahoga Falls, O.  
Link-Belt Co., Chicago, Ill.  
Link-Track Eng. Co., Chicago, Ill.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
McNally - Pittsburgh Mfg. Corp., Pittsburgh, Kansas.  
Manitowoc Eng. Wks., Manitowoc, Wis.  
Merrick Scale Mfg. Co., Passaic, N. J.  
Miles Mfg. Co., Jackson, Mich.  
Mine & Smelter Supply Co., Denver, Colo.  
Pennsylvania Crusher Co., Philadelphia, Penna.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Richardson Scale Co., Clifton, N. J.  
Hiddell, W. A., Corp., Bucyrus, O.  
Robbins Conveying Belt Co., Passaic, N. J.  
Rogers Iron Wks. Co., Joplin, Mo.  
Ross Screen & Feeder Co., New York, N. Y.  
Schaffer Poldometer Co., Pittsburgh, Penna.  
Screw Conveyor Corp., Hammond, Ind.  
Simplicity System Co., Chattanooga, Tenn.  
Smith Eng. Wks., Milwaukee, Wis.  
F. L. Smith & Co., New York, N. Y.  
Stearns Mfg. Co., Inc., Adrian, Mich.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Straub Mfg. Co., Oakland, Calif.  
Syntrol Co., Homer City, Penna.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Universal Eng. Corp., Cedar Rapids, Ia.  
Webster Mfg., Inc., Tiffin, O.  
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Link-Track Eng. Co., Chicago, Ill.  
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McNally - Pittsburgh Mfg. Corp., Pittsburgh, Kansas.  
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Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Richardson Scale Co., Clifton, N. J.  
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Straub Mfg. Co., Oakland, Calif.  
Syntrol Co., Homer City, Penna.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
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Link-Track Eng. Co., Chicago, Ill.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
McNally - Pittsburgh Mfg. Corp., Pittsburgh, Kansas.  
Manitowoc Eng. Wks., Manitowoc, Wis.  
Merrick Scale Mfg. Co., Passaic, N. J.  
Miles Mfg. Co., Jackson, Mich.  
Mine & Smelter Supply Co., Denver, Colo.  
Pennsylvania Crusher Co., Philadelphia, Penna.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Richardson Scale Co., Clifton, N. J.  
Hiddell, W. A., Corp., Bucyrus, O.  
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Schaffer Poldometer Co., Pittsburgh, Penna.  
Screw Conveyor Corp., Hammond, Ind.  
Simplicity System Co., Chattanooga, Tenn.  
Smith Eng. Wks., Milwaukee, Wis.  
F. L. Smith & Co., New York, N. Y.  
Stearns Mfg. Co., Inc., Adrian, Mich.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Straub Mfg. Co., Oakland, Calif.  
Syntrol Co., Homer City, Penna.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Universal Eng. Corp., Cedar Rapids, Ia.  
Webster Mfg., Inc., Tiffin, O.  
Western Mch. Co., San Francisco, Calif.  
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.  
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.  
Wisconsin Foundry & Mach. Co., Madison, Wis.

H. D. Conkey & Co., Mendota, Ill.  
General Refractories Co., Philadelphia, Penna.  
A. P. Green Fire Brick Co., Mexico, Mo.  
Harrison-Walker Refractories Co., Pittsburgh, Penna.  
Laclede-Christy Clay Prod., St. Louis, Mo.  
Mexico Refractories Co., Mexico, Mo.  
Simplicity System Co., Chattanooga, Tenn.

## FIRE EXTINGUISHERS

American-LaFrance-Foamite Corp., Elmira, N. Y.

## FLOOR TILE MACHINES (Concrete)

W. E. Dunn Mfg. Co., Holland, Mich.  
Price Bros. Co., Dayton, O.

## FLOORING SYSTEMS (Concrete)

Kirk & Blum Mfg. Co., Cincinnati, O.

## FLOTATION EQUIPMENT

Denver Equipment Co., Denver, Colo.  
Galigher Co., Salt Lake City, Utah  
Maddox Foundry & Mach. Wks., Inc., Archer, Fla.  
Mine & Smelter Supply Co., Denver, Colo.  
Separation Process Co., Catsaqua, Penna.  
F. L. Smith & Co., New York, N. Y.  
Stearns-Rogers Mfg. Co., Denver, Colo.  
Straub Mfg. Co., Oakland, Calif.

## FORMS (Concrete Burial Vaults) (See Burial Vault Forms)

## FORMS (Concrete, Miscellaneous Ornamental)

Colorcrete Industries, Inc., Holland, Mich.  
Foote, J. B., Foundry Co., Fredericktown, O.  
Gardline Bros., Los Angeles, Calif.  
Hollystone Co., N. Hollywood, Calif.  
Mead Suydam Co., Orange, N. J.  
Miles Mfg. Co., Jackson, Mich.  
Multiplex Concrete Mach. Co., Elmore, O.  
Quinn Wire & Iron Wks., Boone, Ia.

## FROGS (Railway)

American Manganese Steel Div., Chicago Heights, Ill.  
Atlas Car & Mfg. Co., Cleveland, O.  
Bethlehem Steel Co., Bethlehem, Penna.  
Carnegie-Illinois Steel Corp., Pittsburgh, Penna.  
Central Frog & Switch Co., Cincinnati, O.  
L. B. Foster Co., Pittsburgh, Penna.  
Taylor-Wharton Iron & Steel Co., High Bridge, N. J.  
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.

## FUSES (Detonating & Blasting) (See Blasting Caps, Blasting Supplies)

## GARBAGE RECEPTACLE MOLDS (Concrete)

Flint & Walling Mfg. Co., Inc., R. & L. Div., Kendallville, Ind.  
Sanitary Garbage Box Co., Chicago, Ill.

## GARDEN FURNITURE MOLDS (Concrete)

Colorcrete Industries, Inc., Holland, Mich.  
W. E. Dunn Mfg. Co., Holland, Mich.  
Foote, J. B., Foundry Co., Fredericktown, O.  
Multiplex Concrete Mach. Co., Elmore, O.

## GAS PRODUCERS

Blaw-Knox Co., Blawnox, Penna.

## GASOLINE ENGINES

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Briggs & Stratton Corp., Milwaukee, Wis.  
Buda Co., Harvey, Ill.  
Clark Bros. Co., Inc., Olean, N. Y.  
Climax Eng. Co., Chicago, Ill.  
Continental Motors Corp., Detroit, Mich.  
Dake Engine Co., Grand Haven, Mich.  
Fairbanks, Morse & Co., Chicago, Ill.  
Hercules Motors Corp., Canton, O.  
International Harvester Co., Chicago, Ill.  
Mine & Smelter Supply Co., Denver, Colo.  
Minneapolis-Moline Power Implement Co., Minneapolis, Minn.  
New Holland Mach. Co., New Holland, Penna.

Novo Engine Co., Lansing, Mich.  
Orr & Sember, Inc., Reading, Penna.  
Power Mfg. Co., Marion, O.  
Waukesha Motor Co., Waukesha, Wis.  
Western Mach. Co., San Francisco, Calif.  
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.  
K. R. Wilson, Buffalo, N. Y.  
Wisconsin Motor Corp., Milwaukee, Wis.  
Worthington Pump & Mach. Corp., Harrison, N. J.

## GEAR REDUCERS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Earle C. Bacon, Inc., New York, N. Y.  
Cleveland Worm & Gear Co., Cleveland, O.  
Continental Gin Co., Birmingham, Ala.  
The Falk Corp., Milwaukee, Wis.  
Farrel-Birmingham Co., Inc., Buffalo, N. Y.  
D. O. James Mfg. Co., Chicago, Ill.  
W. A. Jones Foundry & Mach. Co., Chicago, Ill.  
Mine & Smelter Supply Co., Denver, Colo.  
Ottumwa Iron Wks., Ottumwa, Ia.  
F. L. Smith & Co., New York, N. Y.  
Winfield H. Smith, Inc., Springfield, Erie Co., N. Y.  
Stephens-Adamson Mfg. Co., Aurora, Ill.

## GEARS

Abart Gear & Mach. Co., Chicago, Ill.  
American Manganese Steel Div., Chicago Heights, Ill.  
Earle C. Bacon, Inc., New York, N. Y.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Bodinson Mfg. Co., San Francisco, Calif.  
C. G. Buchanan Co., Inc., New York, N. Y.  
Cleveland Worm & Gear Co., Cleveland, O.  
Continental Gin Co., Birmingham, Ala.  
De Laval Steam Turbine Co., Trenton, N. J.  
Dodge Mfg. Corp., Mishawaka, Ind.  
Eagle Iron Wks., Des Moines, Ia.  
Erie Steel Foundry Co., Portland, Ore.  
The Falk Corp., Milwaukee, Wis.  
Farrel-Birmingham Co., Inc., Buffalo, N. Y.  
Farrell-Cheek Steel Co., Sandusky, O.  
Foote Bros. Gear & Mach. Corp., Chicago, Ill.  
Gatke Corp., Chicago, Ill.  
Gears & Forgings, Inc., Cleveland, O.  
Greenville Mfg. Wks., Greenville, O.  
George Halss Mfg. Co., New York, N. Y.  
Huron Industries, Inc., Alpena, Mich.  
D. O. James Mfg. Co., Chicago, Ill.  
Jeffrey Mfg. Co., Columbus, O.  
W. A. Jones Foundry & Mach. Co., Chicago, Ill.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Link-Belt Co., Philadelphia, Penna.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
McNally - Pittsburgh Mfg. Corp., Pittsburgh, Kan.  
Medart Co., St. Louis, Mo.  
Mine & Smelter Supply Co., Denver, Colo.  
Oliver Mach. Co., Grand Rapids, Mich.  
Ottumwa Iron Wks., Ottumwa, Ia.  
Palmer-Bee Co., Detroit, Mich.  
Petibone-Mulliken Corp., Chicago, Ill.  
Philadelphia Gear Wks., Philadelphia, Penna.  
Robins Conveying Belt Co., Passaic, N. J.  
Winfield H. Smith, Inc., Springfield, Erie Co., N. Y.  
The Stearns-Rogers Mfg. Co., Denver, Colo.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Twin Disc Clutch Co., Racine, Wis.  
Vulcan Iron Wks., Wilkes-Barre, Penna.  
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.

## GRAPPLERS

American Manganese Steel Div., Chicago Heights, Ill.  
Blaw-Knox Co., Blawnox, Penna.  
Browning Crane & Shovel Co., Cleveland, O.  
Erie Steel Construction Co., Erie, Penna.  
Owen Bucket Co., Cleveland, O.

# DIRECTORY

## GREASE (See Lubricants)

## GRINDING AIDS CEMENT

Dewey & Almy Chem. Co., Cambridge, Mass.

## GRINDING MEDIA (For Ball Mills)

Abbe Eng. Co., New York, N. Y.  
Coates Steel Prod. Co., Greenville, Ill.

Hardinge Co., Inc., York, Penna.  
Manganese Steel Forge Co., Philadelphia, Penna.

Mine & Smelter Supply Co., Denver, Colo.

National Malleable & Steel Castings Co., Cleveland, O.  
Patterson Foundry & Mach. Co., E. Liverpool, O.

The Pennebacker Co., Emmaus, Penna.

F. L. Smith & Co., New York, N. Y.

## GUARDS (Lamp)

Flexible Steel Lacing Co., Chicago, Ill.

## GUNS (Hydraulic Cement)

Colorcrete Industries, Inc., Holland, Mich.  
Eureka Art Stone Works, Eureka, Calif.

Hetherington & Berner, Inc., Indianapolis, Ind.

## GUTTER BLOCK MACHINES (Concrete)

Hollystone Co., N. Hollywood, Calif.  
Kirk & Blum Mfg. Co., Cincinnati, O.

## GYPSUM PLANT MACHINERY

Earle C. Bacon, Inc., New York, N. Y.

Bodinson Mfg. Co., San Francisco, Calif.

Continental Gin Co., Birmingham, Ala.

Elmco Corp., Salt Lake City, Utah.

Her-Born Eng. & Mfg. Co., Sandusky, O.

Link-Belt Co., Chicago, Ill.

McLanahan & Stone Corp., Hollidaysburg, Penna.

Patterson Foundry & Mach. Co., E. Liverpool, O.

Pennsylvania Crusher Co., Philadelphia, Penna.

Raymond Pulverizer Co., Chicago, Ill.

Smith Eng. Wks., Milwaukee, Wis.

F. L. Smith & Co., New York, N. Y.

Sturtevant Mill Co., Dorchester, Mass.

Traylor Eng. & Mfg. Co., Allentown, Penna.

United States Mch. Co., Inc., New York, N. Y.

Vulcan Iron Wks., Wilkes-Barre, Penna.

## GYPSUM PLANTS (Engineers, Contractors)

Erie Steel Construction Co., Erie, Penna.

Gruendler Crusher & Pulverizer Co., St. Louis, Mo.

Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.

Kent Mill Co., Brooklyn, N. Y.

Patterson Foundry & Mach. Co., E. Liverpool, O.

United States Machinery Co., Inc., New York, N. Y.

## HAMMERMILLS (See MILLS, Ball, Etc.)

## HARD SURFACING METALS

Stoddy Co., Whittier, Calif.

Stutz-Sieckes Co., Newark, N. J.

Wall-Colmonoy Corp., Detroit, Mich.

## HARDENERS (Concrete)

Corona Prod. Co., Rogers, Ark.

Harshaw Chem. Co., Cleveland, O.

Sullivan Co., Memphis, Tenn.

Super Concrete Emulsions, Ltd., Los Angeles, Calif.

Truscon Laboratories, Inc., Detroit, Mich.

## HAULAGE SYSTEMS (Electric)

Atlas Car & Mfg. Co., Cleveland, O.

Erie Steel Construction Co., Erie, Penna.

Link-Belt Co., Chicago, Ill.

Sullivan Mch. Co., Michigan City, Ind.

Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.

## HEAT TREATING MACHINES (Drill Steel)

Diamond Iron Wks., Inc., Minneapolis, Minn.

Ingersoll-Rand Co., New York, N. Y.

Mine & Smelter Supply Co., Denver, Colo.

Worthington Pump & Mch. Corp., Harrison, N. J.

## HEATERS (Concrete Mixers)

Aeroll Burner Co., Inc., West New York, N. J.

Hauck Mfg. Co., Brooklyn, N. Y.

Littleford Bros., Inc., Cincinnati, O.

The Macleod Co., Cincinnati, O.

Marvel Equip. Mfg. Co., Chicago, Ill.

White Mfg. Co., Elkhart, Ind.

## HEATERS, ELECTRIC (Asphalt)

Easton Car and Construction Co., New York, N. Y.

General Elec. Co., Schenectady, N. Y.

## HOISTS (Air, Electric, Gasoline, Hydraulic, Steam)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

American Hoist & Derrick Co., St. Paul, Minn.

American Steel Dredge Co., Fort Wayne, Ind.

Atlas Car & Mfg. Co., Cleveland, O.

Barrett-Cravens Co., Chicago, Ill.

C. O. Bartlett & Snow Co., Cleveland, O.

Beaumont Birch Co., Philadelphia, Penna.

H. Brewer & Co., Tecumseh, Mich.

Crooks Equip. & Mfg. Co., Knoxville, Tenn.

C. H. & E. Mfg. Co., Milwaukee, Wis.

Chisholm-Moore Hoist Corp., Tonawanda, N. Y.

The Cleveland Crane & Eng. Co., Wickliffe, O.

Clyde Iron Wks., Inc., Duluth, Minn.

Coring Hoist Co., Danville, Ill.

Commercial Shearing & Stamping Co., Youngstown, O.

H. D. Conkey & Co., Mendota, Ill.

Construction Mch. Co., Waterloo, O.

Continental Gin Co., Birmingham, Ala.

Continental Motors Corp., Detroit, Mich.

Curtis Pneumatic Mch., Inc., St. Louis, Mo.

Dake Engine Co., Grand Haven, Mich.

Detroit Hoist & Mach. Co., Detroit, Mich.

Dobbie Foundry & Mach. Co., Niagara Falls, N. Y.

Elliecott Mach. Corp., Baltimore, Md.

Essick Machy. Co., Los Angeles, Calif.

Fairfield Eng. Co., Marion, O.

Fridy Hoist & Mch. Co., Mountville, Penna.

Gallon Allsteel Body Co., Gallon, O.

Gardner-Denver Co., Quincy, Ill.

Gar Wood Industries, Inc., Detroit, Mich.

Godfrey Conveyor Co., Elkhart, Ind.

Harnischfeger Corp., Milwaukee, Wis.

Hell Co., Milwaukee, Wis.

Hetherington & Berner, Inc., Indianapolis, Ind.

Independent Pneumatic Tool Co., Chicago, Ill.

Ingersoll-Rand Co., New York, N. Y.

Jagers Mach. Co., Columbus, O.

Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.

Lime & Hydrate Plants Co., York, Pa.

Louden Mch. Co., Fairfield, Ind.

McLanahan & Stone Corp., Hollidaysburg, Penna.

Mine & Smelter Supply Co., Denver, Colo.

Nordberg Mfg. Co., Milwaukee, Wis.

Novo Engine Co., Lansing, Mich.

O. K. Clutch & Mch. Co., Columbia, Penna.

Ottumwa Iron Wks., Ottumwa, Ia.

Palmer-Bee Co., Detroit, Mich.

Rogers Iron Wks. Co., Joplin, Mo.

St. Paul Hydraulic Hoist Co., Minneapolis, Minn.

The Stearns-Rogers Mfg. Co., Denver, Colo.

Stephens-Adamson Mfg. Co., Aurora, Ill.

Sterling Mch. Corp., Kansas City, Mo.

Stroudsburg Engine Wks., Stroudsburg, Penna.

Sullivan Mch. Co., Michigan City, Ind.

Superior Body Co., Inc., Marion, Ind.

Traylor Eng. & Mfg. Co., Allentown, Penna.

Truck Equip. Co., Inc., Buffalo, N. Y.

Vulcan Iron Wks., Wilkes-Barre, Penna.

F. M. Welch Eng. Service, Greenville, O.

Western Mch. Co., San Francisco, Calif.

HOOKS (Wire Rope)

American Hoist & Derrick Co., St. Paul, Minn.

Bethlehem Steel Co., Bethlehem, Penna.

Dobbie Foundry & Mach. Co., Niagara Falls, N. Y.

Thomas Laughlin Co., Portland, Me.

John A. Roebling's Sons Co., Trenton, N. J.

Stephens-Adamson Mfg. Co., Aurora, Ill.

## HOPPERS (Aggregates, Cement, Etc.)

Alpha Tank & Sheet Metal Mfg. Co., St. Louis, Mo.

Anchor Concrete Mch. Co., Columbus, O.

Atlas Car & Mfg. Co., Cleveland, O.

C. O. Bartlett & Snow Co., Cleveland, O.

Beaumont Birch Co., Philadelphia, Penna.

Blaw-Knox Co., Blawnox, Penna.

Bodinson Mfg. Co., San Francisco, Calif.

Butler Bin Co., Waukesha, Wis.

Continental Gin Co., Birmingham, Ala.

Erie Steel Construction Co., Erie, Penna.

Garlinghouse Bros., Los Angeles, Calif.

Godfrey Conveyor Co., Elkhart, Ind.

Greenville Mfg. Wks., Greenville, O.

Jeffrey Mfg. Co., Columbus, O.

Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.

Lancaster Iron Wks., Inc., Lancaster, Penna.

Manganese Steel Forge Co., Philadelphia, Penna.

Miles Mfg. Co., Jackson, Mich.

National Steel Prod. Co., Kansas City, Mo.

Ransome Concrete Mch. Co., Dunellen, N. J.

Sprunt, Waldron & Co., Muncie, Penna.

Stephens-Adamson Mfg. Co., Aurora, Ill.

Superior Body Co., Inc., Marion, Ind.

Traylor Eng. & Mfg. Co., Allentown, Penna.

## HOSE (Air Drill, Water, Steam, Sand, Suction & Discharge)

American Brass Co., Waterbury, Conn.

American Steel Dredge Co., Inc., Fort Wayne, Ind.

Boston Woven Hose & Rubber Co., Boston, Mass.

Chicago Pneumatic Tool Co., New York, N. Y.

Cincinnati Rubber Mfg. Co., Cincinnati, O.

Cleveland Rock Drill Co., Cleveland, O.

Firestone Tire & Rubber Co., Akron, O.

Gardner-Denver Co., Quincy, Ill.

Gates Rubber Co., Denver, Colo.

Goodall Rubber Co., Inc., Philadelphia, Penna.

B. F. Goodrich Co., Akron, O.

Goodyear Tire & Rubber Co., Akron, O.

Hetherington & Berner, Inc., Indianapolis, Ind.

Hewitt Rubber Corp., Buffalo, N. Y.

Independent Pneumatic Tool Co., Chicago, Ill.

Ingersoll-Rand Co., New York, N. Y.

Linde Air Prod. Co., New York, N. Y.

Manhattan Rubber Co., Passaic, N. J.

Meckum Engr. Co., Inc., Chicago, Ill.

New York Belting & Packing Co., New York, N. Y.

Mine & Smelter Supply Co., Denver, Colo.

Quaker Rubber Corp., Philadelphia, Penna.

Republic Rubber Co., Youngstown, O.

Sullivan Mch. Co., Michigan City, Ind.

Thermoid Rubber Co., Trenton, N. J.

United States Rubber Co., New York, N. Y.

Western Mch. Co., San Francisco, Calif.

## HOSE FITTINGS

Boston Woven Hose & Rubber Co., Boston, Mass.

Dixon Valve & Coupling Co., Philadelphia, Penna.

Hewitt Rubber Corp., Buffalo, N. Y.

Knox Mfg. Co., Philadelphia, Penna.

## HULLS (Dredge) (See Dredges)

## HYDRATORS (Lime)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Arnold & Weigel, Inc., Woodville, Ohio.

Blaw-Knox Co., Blawnox, Penna.

Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.

Kritzer Co., Chicago, Ill.

Lime & Hydrate Plants Co., York, Penna.

McCann Mfg. Co., Inc., York, Penna.

Traylor Eng. & Mfg. Co., Allentown, Penna.

Vulcan Iron Wks., Wilkes-Barre, Penna.

## IDLERS (Conveyor) (See Conveyor Idlers)

## INDICATORS (Bin) (See Bin Indicators)

## INSULATION (Heat)

A. P. Green Fire Brick Co., Mexico, Mo.

Johns-Manville, New York, N. Y.

Quigley Co., Inc., New York, N. Y.

Refractory & Insulation Corp., New York, N. Y.

F. L. Smith & Co., New York, N. Y.

Wayliffe Co., Chicago, Ill.

## JIGS (Sand & Gravel)

F. H. Bendelari, Joplin, Mo.

Conveyor Co., Inc., Los Angeles, Calif.

Link-Belt Co., Chicago, Ill.

Mine & Smelter Supply Co., Denver, Colo.

Rogers Iron Wks. Co., Joplin, Mo.

Straub Mfg. Co., Oakland, Calif.

Traylor Eng. & Mfg. Co., Allentown, Penna.

Western Mch. Co., San Francisco, Calif.

## JOINT & SLAB MACHINES (Concrete)

Besser Mfg. Co., Alpena, Mich.

W. E. Dunn Mfg. Co., Holland, Mich.

Jackson & Church Co., Saginaw, Mich.

Kirk & Blum Mfg. Co., Cincinnati, O.

## KILN CHAIN SYSTEMS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Chicago Steel Foundry Co., Chicago, Ill.

F. L. Smith & Co., New York, N. Y.

## KILN PARTS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

American Manganese Steel Div., Chicago Heights, Ill.

Atlas Car & Mfg. Co., Cleveland, O.

Blaw-Knox Co., Blawnox, Penna.

C. G. Buchanan Co., Inc., New York, N. Y.

Carborundum Co., Niagara Falls, N. Y.

Chicago Steel Foundry Co., Chicago, Ill.

A. P. Green Fire Brick Co., Mexico, Mo.

Hardinge Co., Inc., York, Penna.

Huron Industries, Inc., Alpena, Mich.

Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.

Manitowoc Eng. Wks., Manitowoc, Wis.

F. L. Smith & Co., New York, N. Y.

# DIRECTORY

McGann Mfg. Co., Inc., York, Penna.  
 Manitowoc Eng. Wks., Manitowoc, Wis.  
 Ruggles-Coles Eng. Co., New York, N. Y.  
 F. L. Smith & Co., New York, N. Y.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 Vulcan Iron Wks., Wilkes-Barre, Penna.  
 Webber Equip. Co., New York, N. Y.

## LABORATORY APPARATUS

American Instrument Co., Inc., Silver Springs, Md.  
 Barnstead Still & Sterilizer Co., Inc., Boston, Mass.  
 Black & Decker Mfg. Co., Towson, Md.  
 Carborundum Co., Niagara Falls, N. Y.  
 Central Scientific Co., Chicago, Ill.  
 Deister Concentrator Co., Ft. Wayne, Ind.  
 Denver Equip. Co., Denver, Colo.  
 Denver Fire Clay Co., Denver, Colo.  
 Fisher Scientific Co., Pittsburgh, Penna.  
 Galigher Co., Salt Lake City, Utah.  
 General Equip. Co., Schenectady, N. Y.  
 Hays Corp., Michigan City, Ind.  
 Humboldt Mfg. Co., Chicago, Ill.  
 Leeds & Northrup Co., Philadelphia, Penna.  
 The Mine & Smelter Supply Co., Denver, Colo.  
 The Patterson Foundry & Mach. Co., E. Liverpool, O.  
 Pyrometer Instrument Co., New York, N. Y.  
 Sargent, E. H. & Co., Chicago, Ill.  
 Scientific Concrete Service Corp., Elizabeth, N. J.  
 C. J. Tagliabue Mfg. Co., Brooklyn, N. Y.

## LADDERS (Dredge)

American Manganese Steel Div., Chicago Heights, Ill.  
 American Steel Dredge Co., Inc., Ft. Wayne, Ind.  
 Eagle Iron Wks., Des Moines, Ia.  
 Ellicott Mach. Corp., Baltimore, Md.  
 Greenville Mfg. Wks., Greenville, O.  
 Kensington Steel Co., Chicago, Ill.  
 Morris Mach. Wks., Baldwinville, N. Y.

## LACING (Belt) (See also Belt Fasteners)

Armstrong-Bray & Co., Chicago, Ill.  
 Barber-Greene Co., Aurora, Ill.  
 Birdsboro Steel Foundry & Mach. Co., Birdsboro, Penna.  
 Chicago Belting Co., Chicago, Ill.  
 Detroit Belt Lacer Co., Detroit, Mich.  
 Flexible Steel Lacing Co., Chicago, Ill.  
 J. E. Rhoads & Sons, Philadelphia, Penna.  
 Victor Balata & Textile Belting Co., Chicago, Ill.

## LAUNDERS (See Chutes)

## LIFT TRUCKS (Concrete Products, Etc.)

Anchor Concrete Mch. Co., Columbus, O.  
 Barrett-Cravens Co., Chicago, Ill.  
 Easton Car and Construction Co., New York, N. Y.  
 Jackson & Church Co., Saginaw, Mich.  
 Lewis-Shepard Sales Corp., Watertown, Mass.  
 Miles Mfg. Co., Jackson, Mich.  
 Multiplex Concrete Mch. Co., Elmore, O.  
 Stearns Mfg. Co., Inc., Adrian, Mich.  
 Williamette Hyster Co., Portland, Ore.

## LIGHTERS (Fuse)

American Cyanamid & Chem. Corp., New York, N. Y.  
 Trojan Powder Co., Allentown, Penna.

## LIME HANDLING EQUIPMENT

Arnold & Weigel, Inc., Woodville, O.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Combustion Eng. Corp., Chicago, Ill.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 The Dorr Co., Inc., New York, N. Y.  
 Dracoo Corp., Cleveland, O.  
 Flink Implement Co., Streator, Ill.  
 Fuller Co., Catasauqua, Penna.  
 Highway Equip. Co., Inc., Cedar Rapids, Ia.  
 Jeffrey Mfg. Co., Columbus, O.  
 Link-Belt Co., Chicago, Ill.

Patterson Foundry & Mach. Co., E. Liverpool, O.  
 Raymond Pulverizer Co., Chicago, Ill.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 Webster Mfg., Inc., Tiffin, O.

## LIME KILNS (See Kilns)

## LIME MORTAR AND PUTTY PLANTS

Chicago Bridge & Iron Co., Chicago, Ill.

## LIME PLANTS

Arnold & Weigel, Inc., Woodville, O.  
 Blaw-Knox Co., Blawnox, Penna.  
 Brooks Equip. & Mfg. Co., Knoxville, Tenn.  
 Ellerman Co., Salt Lake City, Utah.  
 Erie Steel Construction Co., Erie, Penna.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Kensington Steel Co., Chicago, Ill.  
 Patterson Foundry & Mach. Co., E. Liverpool, O.  
 Pennsylvania Crusher Co., Philadelphia, Penna.  
 C. & G. Potts Co., Indianapolis, Ind.  
 F. L. Smith & Co., New York, N. Y.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 Vulcan Iron Wks., Wilkes-Barre, Penna.

## LIME SPREADERS

Baughman Mfg. Co., Jerseyville, Ill.  
 Highway Equip. Co., Inc., Cedar Rapids, Ia.  
 Sommers Prod. Co., Bartonville, Ill.

## LINERS (Kiln) (See Fire Brick)

## LINERS METAL (Mill)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
 American Manganese Steel Div., Chicago Heights, Ill.  
 Atlas Car & Mfg. Co., Cleveland, O.  
 Babcock & Wilcox Co., New York, N. Y.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Carnegie-Illinois Steel Corp., Pittsburgh, Penna.  
 Chicago Perforating Co., Chicago, Ill.  
 Columbus Steel Co., San Francisco, Calif.

Continental Gin Co., Birmingham, Ala.  
 Elmco Corp., Salt Lake City, Utah.  
 Frog Switch & Mfg. Co., Carlisle, Penna.

Hardinge Co., Inc., York, Penna.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Kensington Steel Co., Chicago, Ill.  
 The Mine & Smelter Supply Co., Denver, Colo.  
 National Malleable & Steel Castings Co., Cleveland, O.  
 The Pennebacker Co., Emmaus, Penna.  
 F. L. Smith & Co., New York, N. Y.  
 Straub Mfg. Co., Oakland, Calif.  
 Taylor-Wharton Iron & Steel Co., High Bridge, N. J.  
 Vulcan Iron Wks., Wilkes-Barre, Penna.

## LOADERS (Boat)

Continental Gin Co., Birmingham, Ala.  
 Elmco Corp., Salt Lake City, Utah.  
 Godfrey Conveyor Co., Elkhart, Ind.  
 Jeffrey Mfg. Co., Columbus, O.  
 Link-Belt Co., Philadelphia, Penna.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.

## LOADERS (Box Car)

C. O. Bartlett & Snow Co., Cleveland, O.  
 Brady Conveyors Corp., Chicago, Ill.  
 Continental Gin Co., Birmingham, Ala.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 Diamond Iron Wks., Inc., Minneapolis, Minn.  
 Elmco Corp., Salt Lake City, Utah.  
 Godfrey Conveyor Co., Elkhart, Ind.  
 George Haiss Mfg. Co., New York, N. Y.  
 Jeffrey Mfg. Co., Columbus, O.  
 Link-Belt Co., Philadelphia, Penna.  
 Link-Track Eng. Co., Chicago, Ill.  
 Manierre Eng. & Mfg. Co., Milwaukee, Wis.  
 National Steel Prod. Co., Kansas City, Mo.  
 Ottumwa Box Car Loader Co., Ottumwa, Ia.  
 Portable Mch. Div., A. B. Farquhar Co., York, Penna.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.

Williamette Hyster Co., Portland, Ore.

## LOADERS (Truck)

Barber-Greene Co., Aurora, Ill.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Brooks Equip. & Mfg. Co., Knoxville, Tenn.  
 Continental Gin Co., Birmingham, Ala.  
 Eagle Crusher Co., Inc., Gallion, O.  
 Fairfield Eng. Co., Marion, O.  
 Godfrey Conveyor Co., Elkhart, Ind.  
 George Haiss Mfg. Co., New York, N. Y.  
 Jeffrey Mfg. Co., Columbus, O.  
 Link-Belt Co., Philadelphia, Penna.  
 National Steel Prod. Co., Kansas City, Mo.  
 Portable Mch. Div., A. B. Farquhar Co., York, Penna.  
 Spears-Wellis Mch. Co., Inc., Oakland, Calif.  
 Sullivan Mch. Co., Michigan City, Ind.  
 Williamette Hyster Co., Portland, Ore.

## LOADERS (Underground)

C. O. Bartlett & Snow Co., Cleveland, O.  
 Elmco Corp., Salt Lake City, Utah.  
 Gardner-Denver Co., Quincy, Ill.  
 George Haiss Mfg. Co., New York, N. Y.  
 Jeffrey Mfg. Co., Columbus, O.  
 Mine & Smelter Supply Co., Denver, Colo.  
 Rogers Iron Wks. Co., Joplin, Mo.  
 Sullivan Mch. Co., Michigan City, Ind.  
 Western Mch. Co., San Francisco, Calif.

## LOCOMOTIVES (Diesel)

Brookville Locomotive Co., Brookville, Penna.  
 Cooper-Bessemer Corp., Mt. Vernon, O.  
 Davenport-Besler Corp., Davenport, Ia.  
 Differential Steel Car Co., Findlay, O.  
 The Fate-Root-Heath Co., Plymouth, O.  
 Plymouth Locomotive Wks., Plymouth, O.  
 Vulcan Iron Wks., Wilkes-Barre, Penna.  
 Whitcomb Locomotive Co., Rochelle, Ill.

## LOCOMOTIVES (Diesel-Electric)

Baldwin Locomotive Wks., Eddystone, Penna.  
 Cooper-Bessemer Corp., Mt. Vernon, O.  
 Davenport-Besler Corp., Davenport, Ia.  
 Differential Steel Car Co., Findlay, O.  
 The Fate-Root-Heath Co., Plymouth, O.  
 General Elec. Co., Schenectady, N. Y.  
 Heisler Locomotive Wks., Erie, Penna.  
 Mid-West Locomotive Wks., Hamilton, O.  
 Plymouth Locomotive Wks., Plymouth, O.  
 Vulcan Iron Wks., Wilkes-Barre, Penna.  
 Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.  
 Whitcomb Locomotive Co., Rochelle, Ill.

## LOCOMOTIVES (Electric)

Atlas Car & Mfg. Co., Cleveland, O.  
 Baldwin Locomotive Wks., Eddystone, Penna.  
 Differential Steel Car Co., Findlay, O.  
 General Elec. Co., Schenectady, N. Y.  
 Heisler Locomotive Wks., Erie, Penna.  
 Jeffrey Mfg. Co., Columbus, O.  
 Mid-West Locomotive Wks., Hamilton, O.  
 Vulcan Iron Wks., Wilkes-Barre, Penna.  
 Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.

## LOCOMOTIVES (Gasoline)

Atlas Car & Mfg. Co., Cleveland, O.  
 Baldwin Locomotive Wks., Eddystone, Penna.  
 Brookville Locomotive Co., Brookville, Penna.  
 Continental Motors Corp., Detroit, Mich.  
 Davenport-Besler Corp., Davenport, Ia.  
 Differential Steel Car Co., Findlay, O.  
 The Fate-Root-Heath Co., Plymouth, O.  
 Heisler Locomotive Wks., Erie, Penna.  
 Mid-West Locomotive Wks., Hamilton, O.

Plymouth Locomotive Wks., Plymouth, O.  
 Porter, H. K., Inc., Everett, Mass.  
 Vulcan Iron Wks., Wilkes-Barre, Penna.  
 Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.  
 Whitcomb Locomotive Co., Rochelle, Ill.

## LOCOMOTIVES (Gasoline-Electric)

Atlas Car & Mfg. Co., Cleveland, O.  
 Baldwin Locomotive Wks., Eddystone, Penna.  
 Continental Motors Corp., Detroit, Mich.  
 Davenport-Besler Corp., Davenport, Ia.  
 Differential Steel Car Co., Findlay, O.  
 The Fate-Root-Heath Co., Plymouth, O.  
 Heisler Locomotive Wks., Erie, Penna.  
 Mid-West Locomotive Wks., Hamilton, O.  
 Plymouth Locomotive Wks., Plymouth, O.  
 Porter, H. K., Inc., Everett, Mass.  
 Vulcan Iron Wks., Wilkes-Barre, Penna.  
 Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.  
 Whitcomb Locomotive Co., Rochelle, Ill.

## LOCOMOTIVES (Kerosene)

Baldwin Locomotive Wks., Eddystone, Penna.  
 Brookville Locomotive Co., Brookville, Penna.  
 The Fate-Root-Heath Co., Plymouth, O.  
 Plymouth Locomotive Wks., Plymouth, O.

## LOCOMOTIVES (Oil)

Atlas Car & Mfg. Co., Cleveland, O.  
 Baldwin Locomotive Wks., Eddystone, Penna.  
 Davenport-Besler Corp., Davenport, Ia.  
 The Fate-Root-Heath Co., Plymouth, O.  
 Heisler Locomotive Wks., Erie, Penna.  
 Mid-West Locomotive Wks., Hamilton, O.  
 Plymouth Locomotive Wks., Plymouth, O.  
 Porter, H. K., Inc., Everett, Mass.  
 Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.  
 Whitcomb Locomotive Co., Rochelle, Ill.

## LOCOMOTIVES (Oil-Electric)

Atlas Car & Mfg. Co., Cleveland, O.  
 Baldwin Locomotive Wks., Eddystone, Penna.  
 Davenport-Besler Corp., Davenport, Ia.  
 The Fate-Root-Heath Co., Plymouth, O.  
 General Elec. Co., Schenectady, N. Y.  
 Heisler Locomotive Wks., Erie, Penna.  
 Mid-West Locomotive Wks., Hamilton, O.  
 Plymouth Locomotive Wks., Plymouth, O.  
 Porter, H. K., Inc., Everett, Mass.  
 Vulcan Iron Wks., Wilkes-Barre, Penna.

## LOCOMOTIVES (Steam)

Baldwin Locomotive Wks., Eddystone, Penna.  
 Davenport-Besler Corp., Davenport, Ia.  
 Heisler Locomotive Wks., Erie, Penna.  
 Mid-West Locomotive Wks., Hamilton, O.  
 Porter, H. K., Inc., Everett, Mass.  
 Vulcan Iron Wks., Wilkes-Barre, Penna.

## LOCOMOTIVES (Storage-Battery)

Atlas Car & Mfg. Co., Cleveland, O.  
 Baldwin Locomotive Wks., Eddystone, Penna.  
 General Elec. Co., Schenectady, N. Y.  
 Heisler Locomotive Wks., Erie, Penna.  
 Jeffrey Mfg. Co., Columbus, O.  
 Vulcan Iron Wks., Wilkes-Barre, Penna.  
 Whitcomb Locomotive Co., Rochelle, Ill.

## LUBRICANTS (Grease, Oil, Etc.)

Acheson Colloids Corp., Port Huron, Mich.  
 Albany Grease Co. (Div. of Adam Cook's Sons, Inc.), New York, N. Y.  
 Alemite Corp., Chicago, Ill.  
 Earle C. Bacon, Inc., New York, N. Y.

# DIRECTORY

Joseph Dixon Crucible Co., Jersey City, N. J.  
 Piske Bros. Refining Co., Newark, N. J.  
 Gredag Corp., Niagara Falls, N. Y.  
 Gulf Oil Corp., Pittsburgh, Penna.  
 E. F. Houghton & Co., Philadelphia, Penna.  
 Lunkenheimer Co., Cincinnati, O.  
 Macmillan Petroleum Co., Los Angeles, Calif.  
**Mine & Smelter Supply Co., Denver, Colo.**  
 Penola, Inc., Pittsburgh, Penna.  
 Richfield Oil Corp. of N. Y., New York, N. Y.  
 Shell Oil Company, Inc., New York, N. Y.  
 Sinclair Refining Co., New York, N. Y.  
 Socony-Vacuum Oil Co., New York, N. Y.  
 Standard Oil Co. of Calif., San Francisco, Calif.  
 Standard Oil Co. of Indiana, Chicago, Ill.  
 Texas Company, New York, N. Y.

**LUBRICANTS (Wire Rope)**  
**American Steel & Wire Co., Cleveland, O.**  
 Columbus Steel Co., San Francisco, Calif.  
 Gredag Corp., Niagara Falls, N. Y.  
 Gulf Oil Corp., Pittsburgh, Penna.  
 E. F. Houghton & Co., Philadelphia, Penna.  
**Mine & Smelter Supply Co., Denver, Colo.**  
 Shell Oil Co., Inc., New York, N. Y.  
 Sinclair Refining Co., New York, N. Y.  
 Standard Oil Co. of Calif., San Francisco, Calif.  
 Standard Oil Co. of Indiana, Chicago, Ill.  
 Texas Co., New York, N. Y.

**LUBRICATING SYSTEMS**  
 Alemtic Corp., Chicago, Ill.  
 The Gray Co., Inc., Minneapolis, Minn.  
 Lunkenheimer Co., Cincinnati, O.  
 Trabon Eng. Corp., Cleveland, O.

**MAGNETIC SEPARATORS**  
 C. G. Buchanan Co., Inc., New York, N. Y.  
 Dings Magnetic Separator Co., Milwaukee, Wis.  
 The Electric Controller & Mfg. Co., Cleveland, O.  
 Exolon Co., Blackwell, N. Y.  
 Huron Industries, Inc., Alpena, Mich.  
**Multiplex Concrete Mch. Co., Elmore, O.**  
 Patterson Foundry & Mach. Co., E. Liverpool, O.  
 Prater Pulverizer Co., Chicago, Ill.  
 Separations Eng. Corp., New York, N. Y.  
 Stearns Magnetic Mfg. Co., Milwaukee, Wis.  
 Stearns-Rogers Mfg. Co., Denver, Colo.  
 Western Mch. Co., San Francisco, Calif.  
 Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.

**MANGANESE STEEL PARTS**  
 Alloy Cast Steel Co., Marion, O.  
 American Manganese Steel Div., Chicago Heights, Ill.  
 Earle C. Bacon, Inc., New York, N. Y.  
 Bethlehem Steel Co., Bethlehem, Penna.  
 Eagle Iron Wks., Des Moines, Ia.  
 Erie Steel Foundry Co., Portland, Ore.  
 Frog, Switch & Mfg. Co., Carlisle, Penna.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Kensington Steel Co., Chicago, Ill.  
 Manganese Steel Forge Co., Philadelphia, Penna.  
 Meckum Eng. Inc., Chicago, Ill.  
**Mine & Smelter Supply Co., Denver, Colo.**  
 Morris Mach. Wks., Baldwinville, N. Y.  
 Pettibone-Mulliken Corp., Chicago, Ill.  
 Taylor-Wharton Iron & Steel Co., High Bridge, N. J.  
 Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

**MANHOLE COVER FORMS (Concrete)**  
 Hollystone Co., N. Hollywood, Calif.  
 Kirk & Blum Mfg. Co., Cincinnati, O.  
 Quinn Wire & Iron Wks., Boone, Ia.

**MASONRY SAWS**  
 The Clipper Mfg. Co., St. Louis, Mo.

## MATERIAL HANDLING EQUIPMENT

**Allis-Chalmers Mfg. Co., Milwaukee, Wis.**  
 American Hoist & Derrick Co., St. Paul, Minn.  
**Barber-Greene Co., Aurora, Ill.**  
 Barrett-Cravens Co., Chicago, Ill.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Bay City Shovels, Inc., Bay City, Mich.  
 Beaumont Birch Co., Philadelphia, Penna.  
 Bodinson Mfg. Co., San Francisco, Calif.  
 Browning Crane & Shovel Co., Cleveland, O.  
**Butler Bin Co., Waukesha, Wis.**  
 Chain Belt Co., Milwaukee, Wis.  
 The Chase Foundry & Mfg. Co., Columbus, O.  
 Chisholm-Moore Hoist Corp., Tonawanda, N. Y.  
 The Cleveland Crane & Eng. Co., Wickliffe, O.  
 Clyde Iron Wks., Inc., Duluth, Minn.  
 Coffing Hoist Co., Danville, Ill.  
 The Columbus Conveyor Co., Columbus, O.  
**Continental Gin Co., Birmingham, Ala.**  
 Conveyor Co., Inc., Los Angeles, Calif.  
**Diamond Iron Wks., Inc., Minneapolis, Minn.**  
 Dracoe Corp., Cleveland, O.  
 Easton Car & Construction Co., New York, N. Y.  
 Elmeo Corp., Salt Lake City, Utah.  
 Fairfield Eng. Co., Marion, O.  
 Flink Implement Co., Streator, Ill.  
**Fuller Co., Catasauqua, Penna.**  
 Goofrey Conveyor Co., Elkhart, Ind.  
 Greenville Mfg. Wks., Greenville, O.  
**Gruendler Crusher & Pulverizer Co., St. Louis, Mo.**  
 Hardinge Co., Inc., York, Penna.  
**Harnischfeger Corp., Milwaukee, Wis.**  
**Helitzel Steel Form & Iron Co., Warren, O.**  
 Jeffrey Mfg. Co., Columbus, O.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
**Koehring Co., Milwaukee, Wis.**  
**Link-Belt Co., Chicago, Ill.**  
**Mine & Smelter Supply Co., Denver, Colo.**  
 Northwest Eng. Co., Chicago, Ill.  
 Osgood Company, Marion, O.  
 Palmer-Bee Co., Detroit, Mich.  
 Parsons Eng. Corp., Cleveland, O.  
 Patterson Foundry & Mach. Co., E. Liverpool, O.  
**Robins Conveying Belt Co., Passaic, N. J.**  
**Sauerman Bros., Inc., Chicago, Ill.**  
 Screw Conveyor Corp., Hammond, Ind.  
**Smith Eng. Wks., Milwaukee, Wis.**  
 Sprout, Waldron & Co., Muncy, Penna.  
**Stearns Mfg. Co., Inc., Adrian, Mich.**  
**Stephens-Adamson Mfg. Co., Aurora, Ill.**  
**Sturtevant Mill Co., Dorchester, Mass.**  
 Superior Metal Prod. Co., Inc., Marion, Ind.  
 Syntroon Co., Homer City, Penna.  
 Webster Mfg., Inc., Tiffin, O.  
 Wellman Eng. Co., Cleveland, O.  
 Willamette Hyester Co., Portland, Ore.  
 Wisconsin Foundry & Mach. Co., Madison, Wis.

## MEASURING DEVICES (See also Weighing Conveyors)

**Anchor Concrete Mch. Co., Columbus, O.**  
 Beaumont Birch Co., Philadelphia, Penna.  
**Blaw-Knox Co., Blawnox, Penna.**  
**Butler Bin Co., Waukesha, Wis.**  
 Erie Steel Construction Co., Erie, Penna.  
**Hardinge Co., Inc., York, Penna.**  
**Helitzel Steel Form & Iron Co., Warren, O.**  
 Jeffrey Mfg. Co., Columbus, O.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Lancaster Iron Wks., Inc., Lancaster, Penna.  
**Merrick Scale Mfg. Co., Passaic, N. J.**  
 Neulture Meter Co., New York, N. Y.  
 Richardson Scale Co., Clifton, N. J.  
 Scientific Concrete Service Corp., Elizabeth, N. J.  
**Stearns Mfg. Co., Inc., Adrian, Mich.**  
**Stephens-Adamson Mfg. Co., Aurora, Ill.**  
 Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.  
 Wheeler Instruments Co., Chicago, Ill.

## MECHANICAL RUBBER GOODS

American Steel Dredge Co., Inc., Ft. Wayne, Ind.  
 Boston Woven Hose & Rubber Co., Boston, Mass.  
 Cincinnati Rubber Mfg. Co., Cincinnati, O.  
 Firestone Tire & Rubber Co., Akron, O.  
**Gates Rubber Co., Denver, Colo.**  
 General Scientific Equip. Co., Philadelphia, Penna.  
**Goodall Rubber Co., Inc., Philadelphia, Penna.**  
**B. F. Goodrich Co., Akron, O.**  
 Goodyear Tire & Rubber Co., Akron, O.  
 Hewitt Rubber Corp., Buffalo, N. Y.  
**Manhattan Rubber Mfg. Co., Passaic, N. J.**  
 Pioneer Rubber Mills, San Francisco, Calif.  
 Quaker Rubber Corp., Philadelphia, Penna.  
 Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown, O.  
 Thermoid Rubber Co., Trenton, N. J.  
 United States Rubber Co., New York, N. Y.

## MILLS (Ball, Compartment, Emery, Grinding, Hammer, Rod, Roll, Tube)

Abbe Eng. Co., New York, N. Y.  
**Allis-Chalmers Mfg. Co., Milwaukee, Wis.**  
**American Pulverizer Co., St. Louis, Mo.**  
**Babcock & Wilcox Co., New York, N. Y.**  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Bonnot Co., Canton, O.  
**Bradley Pulverizer Co., Allentown, Penna.**  
 H. Brewer & Co., Tecumseh, Mich.  
 G. Buchanan Co., Inc., New York, N. Y.  
**Colorado Iron Wks. Co., Denver, Colo.**  
 Combustion Eng. Corp., Chicago, Ill.  
 Continental Motors Corp., Detroit, Mich.  
 Denver Equip. Co., Denver, Colo.  
**Dixie Mch. Mfg. Co., St. Louis, Mo.**  
**Elmeo Corp., Salt Lake City, Utah.**  
 Ellis Mills Mfg. Co., Rockaway Beach, Calif.  
**Gruendler Crusher & Pulverizer Co., St. Louis, Mo.**  
**Hardinge Co., Inc., York, Penna.**  
**Jackson & Church Co., Saginaw, Mich.**  
**Jeffrey Mfg. Co., Columbus, O.**  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Kensington Steel Co., Chicago, Ill.  
 Kent Mill Co., Brooklyn, N. Y.  
 Knickerbocker Co., Jackson, Mich.  
 Lester Foundry & Mach. Co., Lewistown, Penna.  
 Lime & Hydrate Plants Co., York, Penna.  
**Mine & Smelter Supply Co., Denver, Colo.**  
**Pennsylvania Crusher Co., Philadelphia, Penna.**  
 Patterson Foundry & Mach. Co., E. Liverpool, O.  
 Prater Pulverizer Co., Chicago, Ill.  
**Raymond Pulverizer Co., Chicago, Ill.**  
**F. L. Smith & Co., New York, N. Y.**  
 Stearns-Rogers Mfg. Co., Denver, Colo.  
 Stedman's Foundry & Mach. Wks., Aurora, Ind.  
 Straub Mfg. Co., Oakland, Calif.  
**Sturtevant Mill Co., Dorchester, Mass.**  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 Vulcan Iron Wks., Wilkes-Barre, Penna.  
 Western Mch. Co., San Francisco, Calif.  
**Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.**

## MIXER BODIES (Truck) (See Bodies)

**MIXERS (Concrete) (See Concrete Mixers)**  
**MIXERS (Plaster)**  
 Blystone Mfg. Co., Cambridge Springs, Penna.  
**Chain Belt Co., Milwaukee, Wis.**  
 Construction Mch. Co., Waterloo, Ia.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 Essick Mch. Co., Los Angeles, Calif.  
 Harshaw Chem. Co., Cleveland, O.  
 Her-Horn Eng. & Mfg. Co., San-Juan, O.  
**Jaeger Mach. Co., Columbus, O.**  
**Koehring Co., Milwaukee, Wis.**  
 Kwik-Mix Concrete Mixer Co., Port Washington, Wis.

**Multiplex Concrete Mch. Co., Elmore, O.**  
 Patterson Foundry & Mach. Co., E. Liverpool, O.  
**Stearns Mfg. Co., Inc., Adrian, Mich.**

## MIXERS (Pugmill)

**Barber-Greene Co., Aurora, Ill.**  
 Bonnot Co., Canton, O.  
**Chain Belt Co., Milwaukee, Wis.**  
**Gruendler Crusher & Pulverizer Co., St. Louis, Mo.**  
**Iowa Mfg. Co., Cedar Rapids, Ia.**  
 Kensington Steel Co., Chicago, Ill.  
 Lancaster Iron Wks., Inc., Lancaster, Penna.  
**Link-Belt Co., Chicago, Ill.**  
 Patterson Foundry & Mach. Co., E. Liverpool, O.  
 Simplicity Systems Co., Chattanooga, Tenn.  
 Warren Bros. Roads Co., Cambridge, Mass.  
 The Webb Corp., Webb City, Mo.  
 White Mfg. Co., Elkhart, Ind.

## MIXERS (Slurry)

**The Dorr Co., Inc., New York, N. Y.**  
 Patterson Foundry & Mach. Co., E. Liverpool, O.  
**F. L. Smith & Co., New York, N. Y.**  
**T. L. Smith Co., Milwaukee, Wis.**

## MORTAR COLORS

Harshaw Chem. Co., Cleveland, O.  
 George S. Mepharm Corp., East St. Louis, Ill.  
 Readron Color & Chem. Wks., Cincinnati, O.  
 Ricketaon Mineral Color Wks., Milwaukee, Wis.  
 Sullivan Co., Memphis, Tenn.  
 Williams, E. K., & Company, Easton, Penna.

## MORTAR MIXERS

C. H. & E. Mfg. Co., Milwaukee, Wis.  
**Chain Belt Co., Milwaukee, Wis.**  
 Construction Mch. Co., Waterloo, Ia.  
**Jaeger Mach. Co., Columbus, O.**  
**Koehring Co., Milwaukee, Wis.**  
 Kwik-Mix Concrete Mixer Co., Port Washington, Wis.  
 Leach Co., Oshkosh, Wis.  
 Ransome Concrete Mch. Co., Dunellen, N. J.  
**Stearns Mfg. Co., Inc., Adrian, Mich.**

## MOTOR TRUCK CONCRETE MIXERS (See also Bodies)

C. O. Bartlett & Snow Co., Cleveland, O.  
**Blaw-Knox Co., Blawnox, Penna.**  
**Concrete Transport Mixer Co., St. Louis, Mo.**  
**Jaeger Mach. Co., Columbus, O.**  
 Mixermobile Co., Inc., Los Angeles, Calif.  
 Ransome Concrete Mch. Co., Dunellen, N. J.  
**T. L. Smith Co., Milwaukee, Wis.**  
 Sterling Motors Corp., Milwaukee, Wis.

## MOTOR TRUCKS

Anam Motor Co., Detroit, Mich.  
 Continental Motors Corp., Detroit, Mich.  
 Diamond "T" Motor Car Co., Chicago, Ill.  
 Dodge Motor Co., Detroit, Mich.  
 Duplex Machinery Co., Battle Creek, Mich.  
 Euclid Road Mch. Co., Cleveland, O.  
 Federal Motor Truck Co., Detroit, Mich.  
 Ford Motor Co., Dearborn, Mich.  
 Four Wheel Drive Co., Clintonville, Wis.  
 Gar Wood Industries, Inc., Detroit, Mich.  
**General Excavator Co., Marion, O.**  
 General Motors Truck Co., Detroit, Mich.  
 Heil Co., Milwaukee, Wis.  
 Hug Co., Highland, Ill.  
 International Harvester Co., Chicago, Ill.  
**Koehring Co., Milwaukee, Wis.**  
 Lee Transit Mixer Co., Indianapolis, Ind.  
 Mack Mfg. Corp., Long Island City, N. Y.  
 Marmon-Herrington Co., Inc., Indianapolis, Ind.  
 National Steel Prod. Co., Kansas City, Mo.  
 Reo Motors, Inc., Lansing, Mich.  
 Sterling Motors Corp., Milwaukee, Wis.  
**Thornton-Tamden Co., Detroit, Mich.**  
 The White Motor Co., Cleveland, O.

## MOTORS (Electrical) (See Electric Motors)

## MOVERS (Car) (See Car Movers)

## NATURAL GAS ENGINES

Climax Eng. Co., Chicago, Ill.

# DIRECTORY

## NOZZLES (Washing)

Binks Mfg. Co., Chicago, Ill.  
Chain Belt Co., Milwaukee, Wis.  
Deister Concentrator Co., Ft. Wayne, Ind.  
Deister Mach. Co., Ft. Wayne, Ind.  
Eagle Iron Wks., Des Moines, Ia.  
Knox Mfg. Co., Philadelphia, Pa.  
Link-Belt Co., Chicago, Ill.  
Lunkenheimer Co., Cincinnati, O.

## OIL (Lubricants) (See Lubricants)

**PALLETS (Steel, Wood for Concrete Products)**  
Anchor Concrete Mch. Co., Columbus, O.  
Blystone Mfg. Co., Cambridge Springs, Penna.  
The Chase Foundry & Mfg. Co., Columbus, O.  
Commercial Shearing & Stamping Co., Youngstown, O.  
Flint & Walling Mfg. Co., Kendallville, Ind.  
Miles Mfg. Co., Jackson, Mich.  
Miner Foundry, Des Moines, Ia.  
Multiplex Concrete Mch. Co., Elmore, O.  
Stearns Mfg. Co., Inc., Adrian, Mich.

## PANS, GRINDING (Wet & Dry)

Bonnot Co., Canton, O.  
H. Brewer & Co., Tecumseh, Mich.  
Kensington Steel Co., Chicago, Ill.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
W. A. Riddell Corp., Bucyrus, O.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Vulcan Iron Wks., Wilkes-Barre, Penna.

## PERFORATED METAL (Screens, Etc.)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Earle C. Bacon, Inc., New York, N. Y.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Bodinson Mfg. Co., San Francisco, Calif.  
Chicago Perforating Co., Chicago, Ill.  
Continental Gin Co., Birmingham, Ala.  
Cross Eng. Co., Carbondale, Penna.  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
Harrington & King Perforating Co., Chicago, Ill.  
Hendrick Mfg. Co., Carbondale, Penna.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Kensington Steel Co., Chicago, Ill.  
Link-Belt Co., Chicago, Ill.  
Manganese Steel Forge Co., Philadelphia, Penna.  
Meckum Eng., Inc., Chicago, Ill.  
Morrow Mfg. Co., Wellston, O.  
Smith Eng. Wks., Milwaukee, Wis.  
Standard Stamping & Perforating Co., Chicago, Ill.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Webber Equip. Co., New York, N. Y.  
Wickwire Spencer Steel Co., New York, N. Y.  
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

## PIPE, CONCRETE MACHINERY

Concrete Pipe Mch. Co., Sioux City, Ia.  
Flint & Walling Mfg. Co., Inc. (R. & L. Div.) Kendallville, Ind.  
Lock Joint Pipe Co., E. Orange, N. J.  
Manganese Steel Forge Co., Philadelphia, Penna.  
Quinn Wire & Iron Wks., Boone, Ia.  
Universal Concrete Pipe Co., Columbus, O.  
R. D. Wood & Co., Philadelphia, Penna.

## PIPE (Dredge, Etc.)

American Manganese Steel Div., Chicago Heights, Ill.  
American Rolling Mill Co., Middletown, O.  
American Steel Dredge Co., Inc., Fort Wayne, Ind.  
Frog Switch & Mfg. Co., Carlisle, Penna.  
Haynes Steelite Co., Kokomo, Ind.  
Hetherington & Berner, Inc., Indianapolis, Ind.  
Lancaster Iron Wks., Inc., Lancaster, Penna.  
Meckum Eng., Inc., Chicago, Ill.  
Morris Mach. Wks., Baldwinville, N. Y.  
Naylor Pipe Co., Chicago, Ill.  
Pittsburgh-Des Moines Steel Co., Pittsburgh, Penna.  
Republic Steel Corp., Cleveland, O.  
Taylor Forge & Pipe Wks., Chicago, Ill.

## PIPE FITTINGS

Chicksan Oil Tool Co., Ltd., Pullerton, Calif.  
Dresser Mfg. Co., Bradford, Penna.  
Fons Flexible Pipe Coupling Co., Royal Oak, Mich.  
Georgia Iron Wks., Augusta, Ga.  
Hetherington & Berner, Inc., Indianapolis, Ind.  
Hewitt Rubber Corp., Buffalo, N. Y.  
Walworth Co., South Boston, Mass.

## PIPE MOLDS & MACHINES (Concrete)

Colorcrete Industries, Inc., Holland, Mich.  
Concrete Equip. Co., Holland, Mich.  
Essick Mach. Co., Los Angeles, Calif.  
Flint & Walling Mfg. Co., Inc. (R. & L. Div.) Kendallville, Ind.  
Kirk & Blum Mfg. Co., Cincinnati, O.  
Quinn Wire & Iron Wks., Boone, Ia.  
Universal Concrete Pipe Co., Columbus, O.

## PLANERS (Shale)

Eagle Iron Wks., Des Moines, Ia.

## PLASTER MACHINERY

Chain Belt Co., Milwaukee, Wis.  
J. H. Ehrsam & Son Mfg. Co., Enterprise, Kans.  
Ransome Concrete Mch. Co., Dunellen, N. J.

## PLASTER MIXERS (See Mixers)

## PNEUMATIC CONVEYORS (See Air Conveyors)

## PNEUMATIC TOOLS (See Also Drills Rock)

Chicago Pneumatic Tool Co., New York, N. Y.  
Cleveland Rock Drill Co., Cleveland, O.  
Davey Compressor Co., Kent, O.  
Gardner-Denver Co., Quincy, Ill.  
Hardsoc Wonder Drill Co., Ottumwa, Ia.  
Independent Pneumatic Tool Co., Chicago, Ill.  
Ingersoll-Rand Co., New York, N. Y.  
The Loomis Mach. Co., Tiffin, O.  
Mine & Smelter Supply Co., Denver, Colo.  
New Haven Vibrator Co., New Haven, Conn.  
O. K. Clutch & Mch. Co., Columbia, Penna.  
Western Mch. Co., San Francisco, Calif.

## PONTOONS (Dredge and Pipe)

American Steel Dredge Co., Inc., Fort Wayne, Ind.  
Bethlehem Steel Co., Bethlehem, Penna.  
Chicago Bridge & Iron Co., Chicago, Ill.  
Ellicott Mach. Corp., Baltimore, Md.  
Greenville Mfg. Wks., Greenville, O.  
Lancaster Iron Wks., Inc., Lancaster, Penna.  
Meckum Eng., Inc., Chicago, Ill.  
Morris Mach. Wks., Baldwinville, N. Y.  
Naylor Pipe Co., Chicago, Ill.  
Pittsburgh-Des Moines Steel Co., Pittsburgh, Penna.  
Welch, F. M., Eng. Service, Greenville, O.

## PORTABLE AGGREGATE PLANTS (See Crushing and Screening Plants, Portable)

## POWDER (Blasting) (See Dynamite and Blasting Explosives)

## PRECIPITATORS (Dust, Electrical)

Research Corp., New York, N. Y.  
Western Precipitation Corp., Los Angeles, Calif.

## PREHEATERS (For Kilns, Etc.)

Louisville Drying Mch. Co., Inc., Louisville, Ky.  
Young Radiator Co., Racine, Wis.

## PULLERS (Car) (See Car Movers)

## PULVERIZER PARTS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
American Manganese Steel Div., Chicago Heights, Ill.  
American Pulverizer Co., St. Louis, Mo.  
Babecek & Wilcox Co., New York, N. Y.  
Bradley Pulverizer Co., Allentown, Penna.  
Brooks Equip. & Mfg. Co., Knoxville, Tenn.  
Coates Steel Prod. Co., Greenville, Ill.  
Dixie Mch. Mfg. Co., St. Louis, Mo.

## Gründler Crusher & Pulverizer

Co., St. Louis, Mo.  
Hendrick Mfg. Co., Carbondale, Penna.  
Jeffrey Mfg. Co., Columbus, O.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Kensington Steel Co., Chicago, Ill.  
Prater Pulverizer Co., Chicago, Ill.  
F. L. Smith & Co., New York, N. Y.  
Taylor-Wharton Iron & Steel Co., High Bridge, N. J.  
Vulcan Iron Wks., Wilkes-Barre, Penna.  
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

## PULVERIZERS (See also Crushers, Mills)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
American Pulverizer Co., St. Louis, Mo.  
Babecek & Wilcox Co., New York, N. Y.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Blaw-Knox Co., Blawnox, Penna.  
Bonnot Co., Canton, O.  
Bradley Pulverizer Co., Allentown, Penna.  
H. Brewer & Co., Tecumseh, Mich.  
Brooks Equip. & Mfg. Co., Knoxville, Tenn.  
C. G. Buchanan Co., Inc., New York, N. Y.  
Columbus Steel Co., San Francisco, Calif. (U. S. Steel Corp., Sub.)  
Combustion Eng. Corp., Chicago, Ill.  
Continental Motors Corp., Detroit, Mich.  
Dixie Mch. Mfg. Co., St. Louis, Mo.  
Elec. Steel Foundry Co., Portland, Ore.  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
Harding Co., Inc., York, Penna.  
Jeffrey Mfg. Co., Columbus, O.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Kent Mill Co., Brooklyn, N. Y.  
Kniekerbocker Co., Jackson, Mich.  
Lewistown Foundry & Mach. Co., Lewistown, Penna.  
McNally-Pittsburg Mfg. Corp., Pittsburg, Kans.  
Mine & Smelter Supply Co., Denver, Colo.  
National Malleable & Steel Castings Co., Cleveland, O.  
New Holland Mach. Co., New Holland, Penna.  
Patterson Foundry & Mach. Co., E. Liverpool, O.  
Pennsylvania Crusher Co., Philadelphia, Penna.  
Prater Pulverizer Co., Chicago, Ill.  
Raymond Pulverizer Co., Chicago, Ill.

F. L. Smith & Co., New York, N. Y.  
Stedman's Foundry & Mach. Wks., Aurora, Ind.  
Stearns-Rogers Mfg. Co., Denver, Colo.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Universal Road Mch. Co., Kingston, N. Y.  
Vulcan Iron Wks., Wilkes-Barre, Penna.  
Weaver Mfg. Co., Los Angeles, Calif.  
Western Mch. Co., San Francisco, Calif.  
Whiting Corp., Harvey, Ill.  
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.

## PULVERATORS (See Pulverizers)

## PUMPS (Air Lift for Cement Slurry, Water)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Chicago Pneumatic Tool Co., New York, N. Y.  
Ingersoll-Rand Co., New York, N. Y.  
F. L. Smith & Co., New York, N. Y.  
PUMPS (Cement) (See Cement Pumps)  
PUMPS (Centrifugal)  
Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
American Manganese Steel Div., Chicago Heights, Ill.  
C. H. & E. Mfg. Co., Milwaukee, Wis.  
Chain Belt Co., Milwaukee, Wis.  
Construction Mch. Co., Waterbury, Conn.  
Dayton-Dowd Co., Quincy, Ill.  
Deming Co., Salem, O.  
Fairbanks, Morse & Co., Chicago, Ill.  
Gardner-Denver Co., Quincy, Ill.  
Goulds Pumps, Inc., Seneca Falls, N. Y.  
Ingersoll-Rand Co., New York, N. Y.  
Jaeger Mach. Co., Columbus, O.

## PUMPS (Dredging) (See Dredge Pumps)

## PUMPS (Pulverized Material) (See Cement Pumps)

## PUMPS (Slurry) (See Slurry Pumps)

## PUMPS (Vacuum)

Abbe Eng. Co., New York, N. Y.  
Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Chicago Pneumatic Tool Co., New York, N. Y.  
Fuller Co., Catasauqua, Penna.  
Gardner-Denver Co., Quincy, Ill.  
Ingersoll-Rand Co., New York, N. Y.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Keystone Driller Co., Beaver Falls, Penna.  
Mine & Smelter Supply Co., Denver, Colo.  
Nash Engineering Co., S. Norwalk, Conn.  
Oliver United Filters, Inc., New York, N. Y.  
Pennsylvania Pump & Compressor Co., Easton, Penna.  
Western Mch. Co., San Francisco, Calif.

Kansas City Hay Press Co., Kansas City, Mo.  
Kimball-Krogh Pump Co.-Div. Food Mch. Corp., Los Angeles, Calif.

## Keystone Driller Co., Beaver Falls, Penna.

Lawrence Mach. & Pump Corp., Lawrence, Mass.  
Layne & Bowler, Inc., Memphis, Tenn.  
Marvel Equip. Mfg. Co., Chicago, Ill.  
Mine & Smelter Supply Co., Denver, Colo.  
Morris Mach. Wks., Baldwinville, N. Y.  
Nash Eng. Co., S. Norwalk, Conn.  
Oliver United Filters, Inc., New York, N. Y.  
Peerless Pump Div., Food Mch. Corp., Los Angeles, Calif.  
Pennsylvania Pump & Compressor Co., Easton, Penna.  
Pomona Pump Co., Pomona, Calif.  
Western Mch. Co., San Francisco, Calif.  
A. B. Willey & Sons, Inc., Denver, Colo.

## PUMPS (Deep Well)

Aldrich Pump Co., Allentown, Penna.  
Allen Cone & Mch. Co., New York, N. Y.  
American-Marsh Pumps, Inc., Battle Creek, Mich.  
Dean Hill Pump Co., Anderson, Ind.  
De Laval Steam Turbine Co., Trenton, N. J.  
Deming Co., Salem, O.  
Electric Wheel Co., Quincy, Ill.  
Erle Pump & Engine Wks., Medina, Penna.  
Essick Mch. Co., Los Angeles, Calif.  
Fairbanks, Morse & Co., Chicago, Ill.  
Gorman-Rupp Co., Mansfield, O.  
Goulds Pumps, Inc., Seneca Falls, N. Y.  
Heil Co., Milwaukee, Wis.  
Keystone Driller Co., Beaver Falls, Penna.  
Layne & Bowler, Inc., Memphis, Tenn.  
Mine & Smelter Supply Co., Denver, Colo.  
Novo Engine Co., Lansing, Mich.  
Peerless Pump Div., Food Mch. Corp., Los Angeles, Calif.  
Pomona Pump Co., Pomona, Calif.  
Victor Equip. Co., San Francisco, Calif.  
Webb City & Cartersville Foundry & Mach. Wks., Webb City, Mo.  
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.  
Worthington Pump & Mch. Corp., Harrison, N. J.

## PUMPS (Diaphragm)

C. H. & E. Mfg. Co., Milwaukee, Wis.  
Colorado Iron Wks. Co., Denver, Colo.  
Construction Mch. Co., Waterbury, Conn.  
Continental Motors Corp., Detroit, Mich.  
Deming Co., Salem, O.  
Denver Equip. Co., Denver, Colo.  
The Burr Co., Inc., New York, N. Y.  
Goulds Pumps, Inc., Seneca Falls, N. Y.  
Harding Co., Inc., York, Penna.  
Jaeger Mach. Co., Columbus, O.  
Mine & Smelter Supply Co., Denver, Colo.  
Novo Engine Co., Lansing, Mich.  
Western Mch. Co., San Francisco, Calif.

## PUMPS (Dredging) (See Dredge Pumps)

## PUMPS (Pulverized Material) (See Cement Pumps)

## PUMPS (Slurry) (See Slurry Pumps)

## PUMPS (Vacuum)

Abbe Eng. Co., New York, N. Y.  
Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Chicago Pneumatic Tool Co., New York, N. Y.  
Fuller Co., Catasauqua, Penna.  
Gardner-Denver Co., Quincy, Ill.  
Ingersoll-Rand Co., New York, N. Y.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Keystone Driller Co., Beaver Falls, Penna.  
Mine & Smelter Supply Co., Denver, Colo.  
Nash Engineering Co., S. Norwalk, Conn.  
Oliver United Filters, Inc., New York, N. Y.  
Pennsylvania Pump & Compressor Co., Easton, Penna.  
Western Mch. Co., San Francisco, Calif.

# DIRECTORY

## PYROMETERS

Bayley Meter Co., Cleveland, O.  
Bristol Co., Waterbury, Conn.  
Brown Instrument Co., Philadelphia, Penna.  
General Elec. Co., Schenectady, N. Y.  
J. B. T. Instruments, Inc., New Haven, Conn.  
Leeds & Northrup Co., Philadelphia, Penna.  
Mine & Smelter Supply Co., Denver, Colo.  
The Simplicity System Co., Chattanooga, Tenn.  
Tamm's Silica Co., Chicago, Ill.  
Wheelco Instruments Co., Chicago, Ill.

## RACKS (Curing)

Besser Mfg. Co., Alpena, Mich.  
The Chase Foundry & Mfg. Co., Columbus, O.  
Jackson & Church Co., Saginaw, Mich.  
Multiplex Concrete Mch. Co., Elmore, O.  
Stearns Mfg. Co., Inc., Adrian, Mich.

## RAILS (Relay)

Central Frog & Switch Co., Cincinnati, O.  
The Chase Foundry & Mfg. Co., Columbus, O.  
L. B. Foster Co., Pittsburgh, Penna.

## RAILWAY (Industrial Equipment)

Atlas Car & Mfg. Co., Cleveland, O.  
Bethlehem Steel Co., Bethlehem, Penna.  
Buda Co., Harvey, Ill.  
Central Frog & Switch Co., Cincinnati, O.  
The Chase Foundry & Mfg. Co., Columbus, O.  
L. B. Foster Co., Pittsburgh, Penna.  
Frog, Switch & Mfg. Co., Carlisle, Penna.  
General Equip. Co., Schenectady, N. Y.  
National Bearing Metals Corp., St. Louis, Mo.  
Pressed Steel Car Co., Inc., Pittsburgh, Penna.

## RECTIFIERS (Electric)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
General Elec. Co., Schenectady, N. Y.  
Separation Eng. Corp., New York, N. Y.  
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.

## RECUPERATORS (Waste Heat)

Manitowoc Eng. Wks., Manitowoc, Wis.  
Traylor Eng. & Mfg. Co., Allentown, Penna.

## REFRACTORIES

Basic Refractories, Inc., Cleveland, O.  
Bothfield Refractories Co., Philadelphia, Penna.  
Carborundum Co., Niagara Falls, N. Y.  
Chicago Fire Brick Co., Chicago, Ill.  
Corhart Refractories Co., Louisville, Ky.  
Denver Fire Clay Co., Denver, Colo.  
General Refractories Co., Philadelphia, Penna.  
A. P. Green Fire Brick Co., Mexico, Mo.  
Harbison-Walker Refractories Co., Pittsburgh, Penna.  
Ironton Fire Brick Co., Ironton, O.  
Johns-Manville, New York, N. Y.  
Keasbey & Mattison Co., Ambler, Penna.  
LaCade-Christy Clay Prod., St. Louis, Mo.  
Malvern Mining, Milling & Mfg. Co., Chicago, Ill.  
Mexico Refractories Co., Mexico, Mo.  
Mine & Smelter Supply Co., Denver, Colo.  
Patterson Foundry & Mach. Co., E. Liverpool, O.  
Pibrico Jointless Firebrick Co., Chicago, Ill.  
Quigley Co., Inc., New York, N. Y.  
Refractory & Insulation Corp., New York, N. Y.  
Universal Atlas Cement Co., New York, N. Y.

## REGULATORS (Voltage)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
General Elec. Co., Schenectady, N. Y.  
Mine & Smelter Supply Co., Denver, Colo.  
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.  
Wheelco Instruments Co., Chicago, Ill.

## REWASHERS (Screw; for Sand, Gravel, Etc.)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Conveyor Co., Inc., Los Angeles, Calif.  
Eagle Iron Wks., Des Moines, Ia.  
Link-Belt Co., Chicago, Ill.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
Mine & Smelter Supply Co., Denver, Colo.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Smith Eng. Wks., Milwaukee, Wis.

## ROCK WOOL CUPOLAS (See Cupolas)

## RODS (Welding) (See Welding Rods)

## ROLLER BEARINGS

Dodge Mfg. Corp., Mishawaka, Ind.  
Hyatt Roller Bearing Co., Newark, N. J.  
Norma-Hoffmann Bearings Corp., Stamford, Conn.

## ROLLS (Conveyor) (See Conveyor Rollers)

## ROLLS (Crushing) (See Crushers)

## ROLLS (Rubber, Covered)

Cincinnati Rubber Mfg. Co., Cincinnati, O.  
Continental Gln Co., Birmingham, Ala.  
Conveyor Co., Inc., Los Angeles, Calif.  
Dayton Rubber Mfg. Co., Dayton, O.  
Goodall Rubber Co., Inc., Philadelphia, Penna.  
B. F. Goodrich Co., Akron, O.  
Link-Belt Co., Indianapolis, Ind.  
The Manhattan Rubber Mfg. Co., Passaic, N. J.  
Mine & Smelter Supply Co., Denver, Colo.  
Quaker Rubber Corp., Philadelphia, Penna.  
Republic Rubber Div., Lee Rubber & Tire Corp., Youngstown, O.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Tyler Rubber Co., Andover, Mass.  
United States Rubber Co., New York, N. Y.

## ROOFING TILE MACHINES (Concrete)

W. E. Dunn Mfg. Co., Holland, Mich.  
L. Hansen Co., Kansas City, Mo.  
Price Bros. Co., Dayton, O.

## ROPE (Transmission)

American Steel & Wire Co., Cleveland, O.  
Continental Gln Co., Birmingham, Ala.  
John A. Roebling's Sons Co., Trenton, N. J.  
Wall Rope Wks., Inc., New York, N. Y.

## ROPE (Wire) (See Wire Rope)

## SAFETY EQUIPMENT (Goggles, Shoes, Etc.)

American Optical Co., Southbridge, Mass.  
Boyer-Campbell Co., Detroit, Mich.  
Davis Emergency Equip. Co., Inc., Newark, N. J.  
General Scientific Equip. Co., Philadelphia, Penna.  
The Goggle Parts Co., Cleveland, O.  
International Shoe Co., St. Louis, Mo.  
Keasbey & Mattison Co., Ambler, Penna.  
Lincoln Elec. Co., Cleveland, O.  
Linde Air Prod. Co., New York, N. Y.  
Mine & Smelter Supply Co., Denver, Colo.  
Mine Safety Appliance Co., Pittsburgh, Penna.  
Pulmosan Safety Equip. Corp., Brooklyn, N. Y.  
Weldit Acetylene Co., Detroit, Mich.  
Wilson Prod., Inc., Reading, Penna.

## SAND DRAGS

American Manganese Steel Div., Chicago Heights, Ill.  
Bodinson Mfg. Co., San Francisco, Calif.  
Conveyor Co., Inc., Los Angeles, Calif.  
Eagle Iron Wks., Des Moines, Ia.  
Greenville Mfg. Wks., Greenville, S. C.  
Jeffrey Mfg. Co., Columbus, O.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
Meckum Eng. Co., Inc., Chicago, Ill.

## Mine & Smelter Supply Co., Denver, Colo.

Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Rogers Iron Wks., Joplin, Mo.  
Smith Eng. Wks., Milwaukee, Wis.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Straub Mfg. Co., Oakland, Calif.

## SAND & GRAVEL PLANTS (Engineer and Contractors)

Earle C. Bacon, Inc., New York, N. Y.  
W. C. Bennett Co., Chicago, Ill.  
Bodinson Mfg. Co., San Francisco, Calif.  
Conveyor Co., Inc., Los Angeles, Calif.  
Diamond Iron Wks., Inc., Minneapolis, Minn.  
Eagle Iron Wks., Des Moines, Ia.  
Erie Steel Construction Co., Erie, Penna.  
Fairfield Eng. Co., Marion, O.  
Garlinghouse Bros., Los Angeles, Calif.  
Greenville Mfg. Wks., Greenville, O.  
Grundler Crusher & Pulverizer Co., St. Louis, Mo.  
Helzel Steel Form & Iron Co., Warren, O.  
Iowa Mfg. Co., Cedar Rapids, Ia.  
Jackson & Church Co., Saginaw, Mich.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Kensington Steel Co., Chicago, Ill.  
Link-Belt Co., Chicago, Ill.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
Meckum Eng. Co., Inc., Chicago, Ill.  
Pennsylvania Crusher Co., Philadelphia, Penna.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Smith Eng. Wks., Milwaukee, Wis.  
Stearns-Rogers Mfg. Co., Denver, Colo.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Universal Road Mch. Co., Kingston, N. Y.  
F. M. Welch Eng. Service, Greenville, O.  
Western Mch. Co., San Francisco, Calif.  
Wisconsin Foundry & Mach. Co., Madison, Wis.

## SAND-LIME BRICK MACHINERY

Besser Mfg. Co., Alpena, Mich.  
Jackson & Church Co., Saginaw, Mich.  
Kensington Steel Co., Chicago, Ill.  
Multiplex Concrete Mch. Co., Elmore, O.  
Riddell, W. A., Corp., Bucyrus, O.

## SAND RECOVERY MACHINERY (Cones, Classifiers, Dewaterers, Etc.)

Allen Cone & Mach. Co., New York, N. Y.  
Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Bodinson Mfg. Co., San Francisco, Calif.  
The Columbus Conveyor Co., Columbus, O.  
Conveyor Co., Inc., Los Angeles, Calif.  
Deister Concentrator Co., Ft. Wayne, Ind.  
Deister Mach. Co., Ft. Wayne, Ind.  
The Dorr Co., Inc., New York, N. Y.  
Eagle Iron Wks., Des Moines, Ia.  
Hardinge Co., Inc., York, Penna.  
Iowa Mfg. Co., Cedar Rapids, Ia.  
Jeffrey Mfg. Co., Columbus, O.  
Link-Belt Co., Chicago, Ill.  
Mine & Smelter Supply Co., Denver, Colo.  
Smith Eng. Wks., Milwaukee, Wis.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Straub Mfg. Co., Oakland, Calif.  
Universal Road Mch. Co., Kingston, N. Y.  
Western Mch. Co., San Francisco, Calif.

## SCALES (Conveyor) (See Conveyors, Weighing)

## SCALES (Hopper)

Atlas Car & Mfg. Co., Cleveland, O.  
Beaumont Birch Co., Philadelphia, Penna.  
Blaw-Knox Co., Blawnox, Penna.  
Bodinson Mfg. Co., San Francisco, Calif.  
Bonded Scale Co., Columbus, O.  
Butler Bin Co., Waukesha, Wis.  
Erie Steel Construction Co., Erie, Penna.  
Garlinghouse Bros., Los Angeles, Calif.  
Helzel Steel Form & Iron Co., Warren, O.

Howe Scale Co., Rutland, Vt.  
Johnson, S. C., Co., Champaign, Ill.  
The Kron Co., Bridgeport, Conn.  
Richardson Scale Co., Clifton, N. J.  
Scientific Concrete Service Corp., Elizabeth, N. J.  
Streeter-Amet Co., Chicago, Ill.  
Winslow Government Standard Scale Wks., Inc., Terre Haute, Ind.

## SCALES (Truck, Railway)

Beaumont Birch Co., Philadelphia, Penna.  
Bodinson Mfg. Co., San Francisco, Calif.  
Bonded Scale Co., Columbus, O.  
Butler Bin Co., Waukesha, Wis.  
The Exact Weight Scale Co., Columbus, O.  
Fairbanks, Morse & Co., Chicago, Ill.  
B. F. Gump Co., Chicago, Ill.  
Howe Scale Co., Rutland, Vt.  
The Kron Co., Bridgeport, Conn.  
Merrick Scale Mfg. Co., Passaic, N. J.  
Mine & Smelter Supply Co., Denver, Colo.  
Richardson Scale Co., Clifton, N. J.  
Scientific Concrete Service Corp., Elizabeth, N. J.  
Simplicity System Co., Chattanooga, Tenn.  
Streeter-Amet Co., Chicago, Ill.  
Toledo Scale Co., Toledo, O.  
Webb Corp., Webb City, Mo.  
Webb Equip. Co., New York, N. Y.  
Winslow Government Standard Scale Wks., Inc., Terre Haute, Ind.

## SCRAPERS (Power Drag)

J. D. Adams Co., Indianapolis, Ind.  
American Hoist & Derrick Co., St. Paul, Minn.  
Baker Mfg. Co., Springfield, Ill.  
Beaumont Birch Co., Philadelphia, Penna.  
Blaw-Knox Co., Blawnox, Penna.  
Continental Roll & Steel Foundry Co., East Chicago, Ind.  
Euclid Road Mch. Co., Cleveland, O.  
Gar Wood Industries, Inc., Detroit, Mich.  
Mid-West Piping & Supply Co., St. Louis, Mo.  
Mine & Smelter Supply Co., Denver, Colo.  
Sauerman Bros., Inc., Chicago, Ill.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Toledo Wheelbarrow Co., Toledo, O.

## SCRAPERS (Tractor)

Bucyrus-Erie Co., S. Milwaukee, Wis.  
La Plant-Choate Mfg. Co., Inc., Cedar Rapids, Ia.  
R. G. LeTouneau, Inc., Peoria, Ill.

## SCREEN CLOTH (Woven-Wire)

Earle C. Bacon, Inc., New York, N. Y.  
Buffalo Wire Wks. Co., Buffalo, N. Y.  
Cleveland Wire Cloth & Mfg. Co., Cleveland, O.  
Grundler Crusher & Pulverizer Co., St. Louis, Mo.  
B. F. Gump Co., Chicago, Ill.  
Harristeel Prod. Co., New York, N. Y.  
Iowa Mfg. Co., Cedar Rapids, Ia.  
Jeffrey Mfg. Co., Columbus, O.  
Ludlow-Saylor Wire Co., St. Louis, Mo.  
Manganese Steel Forge Co., Philadelphia, Penna.  
Michigan Wire-Cloth Co., Detroit, Mich.  
Mine & Smelter Supply Co., Denver, Colo.  
Newark Wire Cloth Co., Newark, N. J.  
Patterson Foundry & Mach. Co., E. Liverpool, O.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Robins Conveying Belt Co., Passaic, N. J.  
John A. Roebling's Sons Co., Trenton, N. J.  
Simplicity Eng. Co., Durand, Mich.  
Simplicity System Co., Chattanooga, Tenn.  
Smith Eng. Wks., Milwaukee, Wis.  
Taylor-Wharton Iron & Steel Co., High Bridge, N. J.  
W. S. Tyler Co., Cleveland, O.  
Wickwire Spencer Steel Co., New York, N. Y.

## SCREEN PARTS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
American Manganese Steel Div., Chicago Heights, Ill.  
Earle C. Bacon, Inc., New York, N. Y.

# DIRECTORY

Bodinson Mfg. Co., San Francisco, Calif.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 Deister Mach. Co., Ft. Wayne, Ind.  
 Frog, Switch & Mfg. Co., Carlisle, Penna.  
 Greenville Mfg. Wks., Greenville, O.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.  
 George Haiss Mfg. Co., New York, N. Y.  
 Hendrick Mfg. Co., Carbondale, Penna.  
 Iowa Mfg. Co., Cedar Rapids, Ia.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Kensington Steel Co., Chicago, Ill.  
 Link-Belt Co., Philadelphia, Penna.  
 Mine & Smelter Supply Co., Denver, Colo.  
 Northmann-Duffke Co., Milwaukee, Wis.  
 Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
 Robins Conveying Belt Co., Passaic, N. J.  
 Rogers Iron Wks., Joplin, Mo.  
 Simplicity Eng. Co., Durand, Mich.  
 Simplicity System Co., Chattanooga, Tenn.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.

**SCREEN PLATES (Perforated Metal)**  
 Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
 Alpha Tank & Sheet Metal Mfg. Co., St. Louis, Mo.  
 American Manganese Steel Div., Chicago Heights, Ill.  
 Earle C. Bacon, Inc., New York, N. Y.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Bodinson Mfg. Co., San Francisco, Calif.  
 Chicago Perforating Co., Chicago, Ill.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 Cross Eng. Co., Carbondale, Penna.  
 Diamond Iron Wks., Inc., Minneapolis, Minn.  
 Frog, Switch & Mfg. Co., Carlisle, Penna.  
 Harrington & King Perforating Co., Chicago, Ill.  
 Hendrick Mfg. Co., Carbondale, Penna.  
 Iowa Mfg. Co., Cedar Rapids, Ia.  
 Jeffrey Mfg. Co., Columbus, O.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Kensington Steel Co., Chicago, Ill.  
 Link-Belt Co., Chicago, Ill.  
 Manganese Steel Forge Co., Philadelphia, Penna.  
 Meekum Eng. Co., Inc., Chicago, Ill.  
 Mine & Smelter Supply Co., Denver, Colo.  
 Morrow Mfg. Co., Wellston, O.  
 National Steel Prod. Co., Kansas City, Mo.  
 Northmann-Duffke Co., Milwaukee, Wis.  
 Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
 Robins Conveying Belt Co., Passaic, N. J.  
 Rogers Iron Wks., Joplin, Mo.  
 Simplicity Eng. Co., Durand, Mich.  
 Smith Eng. Wks., Milwaukee, Wis.  
 Standard Stamping & Perforating Co., Chicago, Ill.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 Wickwire Spencer Steel Co., New York, N. Y.

**SCREENS (Gravity)**  
 Chicago Perforating Co., Chicago, Ill.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 Diamond Iron Wks., Inc., Minneapolis, Minn.  
 Godfrey Conveyor Co., Elkhart, Ind.  
 Greenville Mfg. Wks., Greenville, O.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.  
 Harrington & King Perforating Co., Chicago, Ill.  
 Hendrick Mfg. Co., Carbondale, Penna.  
 Iowa Mfg. Co., Cedar Rapids, Ia.  
 Link-Belt Co., Chicago, Ill.  
 Louisville Drying Mch. Co., Inc., Louisville, Ky.  
 Mine & Smelter Supply Co., Denver, Colo.  
 National Steel Prod. Co., Kansas City, Mo.  
 Separations Eng. Corp., New York, N. Y.

Smith Eng. Wks., Milwaukee, Wis.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.  
 Sturtevant Mill Co., Dorchester, Mass.  
 Universal Eng. Corp., Cedar Rapids, Ia.  
 Universal Road Mch. Co., Kingston, N. Y.  
 Universal Vibrating Screen Co., Racine, Wis.  
 Webster Mfg., Inc., Tiffin, O.

**SCREENS (Grizzly)**  
 Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
 Alpha Tank & Sheet Metal Mfg. Co., St. Louis, Mo.  
 Atlas Car & Mfg. Co., Cleveland, O.  
 Austin-Western Road Mch. Co., Aurora, Ill.  
 Earle C. Bacon, Inc., New York, N. Y.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Chicago Perforating Co., Chicago, Ill.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 Diamond Iron Wks., Inc., Minneapolis, Minn.  
 Eagle Iron Wks., Des Moines, Ia.  
 Godfrey Conveyor Co., Elkhart, Ind.  
 Greenville Mfg. Wks., Greenville, O.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.  
 Harrington & King Perforating Co., Chicago, Ill.  
 Hendrick Mfg. Co., Carbondale, Penna.  
 Huron Industries, Inc., Alpena, Mich.  
 Iowa Mfg. Co., Cedar Rapids, Ia.  
 Jeffrey Mfg. Co., Columbus, O.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Kensington Steel Co., Chicago, Ill.  
 Korb-Pettit Wire Fabrics & Iron Wks., Inc., Philadelphia, Penna.  
 Lewistown Foundry & Mach. Co., Lewistown, Penna.  
 Link-Belt Co., Chicago, Ill.  
 Manganese Steel Forge Co., Philadelphia, Penna.  
 Mine & Smelter Supply Co., Denver, Colo.  
 National Steel Prod. Co., Kansas City, Mo.  
 Pettibone-Mulliken Corp., Chicago, Ill.  
 Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
 Robins Conveying Belt Co., Passaic, N. J.  
 Rogers Iron Wks., Joplin, Mo.  
 Separations Eng. Corp., New York, N. Y.  
 Simplicity Eng. Co., Durand, Mich.  
 Smith Eng. Wks., Milwaukee, Wis.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.  
 Straub Mfg. Co., Oakland, Calif.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 W. S. Tyler Co., Cleveland, O.  
 Universal Eng. Corp., Cedar Rapids, Ia.  
 Universal Road Mch. Co., Kingston, N. Y.  
 Webster Mfg. Co., Inc., Tiffin, O.  
 Western Mch. Co., San Francisco, Calif.

**SCREENS (Laboratory)**  
 Buffalo Wire Wks., Co., Inc., Buffalo, N. Y.  
 Chicago Perforating Co., Chicago, Ill.  
 Denver Equip. Co., Denver, Colo.  
 Harrington & King Perforating Co., Chicago, Ill.  
 Hendrick Mfg. Co., Carbondale, Penna.  
 Jeffrey Mfg. Co., Columbus, O.  
 Link-Belt Co., Chicago, Ill.  
 Mine & Smelter Supply Co., Denver, Colo.  
 Patterson Foundry & Mach. Co., E. Liverpool, O.  
 Productive Equip. Corp., Chicago, Ill.  
 Separations Eng. Corp., New York, N. Y.  
 Sturtevant Mill Co., Dorchester, Mass.  
 W. S. Tyler Co., Cleveland, O.  
 Universal Vibrating Screen Co., Racine, Wis.

**SCREENS (Revolving)**  
 Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
 Austin-Western Road Mch. Co., Aurora, Ill.  
 Earle C. Bacon, Inc., New York, N. Y.  
 Bodinson Mfg. Co., San Francisco, Calif.  
 Buffalo Wire Wks. Co., Inc., Buffalo, N. Y.  
 Chicago Perforating Co., Chicago, Ill.  
 Continental Gin Co., Birmingham, Ala.

Conveyor Co., Inc., Los Angeles, Calif.  
 Diamond Iron Wks., Inc., Minneapolis, Minn.  
 Eagle Iron Wks., Des Moines, Ia.  
 Greenville Mfg. Wks., Greenville, O.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.  
 George Haiss Mfg. Co., New York, N. Y.  
 Harrington & King Perforating Co., Chicago, Ill.  
 Hendrick Mfg. Co., Carbondale, Penna.  
 Iowa Mfg. Co., Cedar Rapids, Ia.  
 Jeffrey Mfg. Co., Columbus, O.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Korb-Pettit Wire Fabrics & Iron Wks., Inc., Philadelphia, Penna.  
 Lancaster Iron Wks., Inc., Lancaster, Pa.  
 Link-Belt Co., Chicago, Ill.  
 McLanahan & Stone Corp., Hollidaysburg, Penna.  
 The McNally-Pittsburg Mfg. Corp., Pittsburg, Kans.  
 Manganese Steel Forge Co., Philadelphia, Penna.  
 Mine & Smelter Supply Co., Denver, Colo.  
 National Steel Prod. Co., Kansas City, Mo.  
 Northmann-Duffke Co., Milwaukee, Wis.  
 Patterson Foundry & Mach. Co., E. Liverpool, O.  
 Rogers Iron Wks., Joplin, Mo.  
 Sprout, Waldron & Co., Muncy, Penna.  
 Stearns Mfg. Co., Inc., Adrian, Mich.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.  
 Straub Mfg. Co., Oakland, Calif.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 Universal Eng. Corp., Cedar Rapids, Ia.  
 Universal Road Mch. Co., Kingston, N. Y.  
 Webber Equip. Co., New York, N. Y.  
 Webster Mfg., Inc., Tiffin, O.  
 Western Mch. Co., San Francisco, Calif.

**SCREENS (Scrubbers)**  
 Allen Cone & Mch. Co., New York, N. Y.  
 Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
 Earle C. Bacon, Inc., New York, N. Y.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Bodinson Mfg. Co., San Francisco, Calif.  
 Chicago Perforating Co., Chicago, Ill.  
 Diamond Iron Wks., Inc., Minneapolis, Minn.  
 Fairfield Eng. Co., Marion, O.  
 Greenville Mfg. Wks., Greenville, O.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.  
 Harrington & King Perforating Co., Chicago, Ill.  
 Hendrick Mfg. Co., Carbondale, Penna.  
 Iowa Mfg. Co., Cedar Rapids, Ia.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Korb-Pettit Wire Fabrics & Iron Wks., Inc., Philadelphia, Penna.  
 Lewistown Foundry & Mach. Co., Lewistown, Penna.  
 Link-Belt Co., Chicago, Ill.  
 McLanahan & Stone Corp., Hollidaysburg, Penna.  
 Mine & Smelter Supply Co., Denver, Colo.  
 Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
 Rogers Iron Wks., Joplin, Mo.  
 Simplicity Eng. Co., Durand, Mich.  
 Smith Eng. Wks., Milwaukee, Wis.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.  
 Straub Mfg. Co., Oakland, Calif.  
 Traylor Eng. & Mfg. Co., Allentown, Penna.  
 W. S. Tyler Co., Cleveland, O.  
 Universal Eng. Corp., Cedar Rapids, Ia.  
 F. M. Welch Eng. Service, Greenville, O.

**SCREENS (Vibrating and Shaker)**  
 Allen Cone & Mch. Co., New York, N. Y.  
 Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
 Austin-Western Road Mch. Co., Aurora, Ill.  
 Earle C. Bacon, Inc., New York, N. Y.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Bodinson Mfg. Co., San Francisco, Calif.  
 Buffalo Wire Wks. Co., Inc., Buffalo, N. Y.

Chicago Perforating Co., Chicago, Ill.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 Deister Concentrator Co., Ft. Wayne, Ind.  
 Deister Mach. Co., Ft. Wayne, Ind.  
 Denver Equip. Co., Denver, Colo.  
 Diamond Iron Wks., Inc., Minneapolis, Minn.  
 Godfrey Conveyor Co., Elkhart, Ind.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.  
 B. F. Gump Co., Chicago, Ill.  
 Harrington & King Perforating Co., Chicago, Ill.  
 Hendrick Mfg. Co., Carbondale, Penna.  
 Huron Industries, Inc., Alpena, Mich.  
 Iowa Mfg. Co., Cedar Rapids, Ia.  
 Jeffrey Mfg. Co., Columbus, O.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Kent Mill Co., Brooklyn, N. Y.  
 Korb-Pettit Wire Fabrics & Iron Wks., Inc., Philadelphia, Penna.  
 Lewistown Foundry & Mach. Co., Lewistown, Penna.  
 Link-Belt Co., Philadelphia, Penna.  
 McLanahan & Stone Corp., Hollidaysburg, Penna.  
 The McNally-Pittsburg Mfg. Corp., Pittsburg, Kans.  
 Mine & Smelter Supply Co., Denver, Colo.  
 New Holland Mach. Co., New Holland, Penna.  
 Nordberg Mfg. Co., Milwaukee, Wis.  
 Northmann-Duffke Co., Milwaukee, Wis.  
 Orville Simpson Co., The Cincinnati, O.  
 Patterson Foundry & Mach. Co., E. Liverpool, O.  
 Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
 Productive Equip. Corp., Chicago, Ill.  
 Robins Conveying Belt Co., Passaic, N. J.  
 Rogers Iron Wks., Joplin, Mo.  
 Screen Equip. Co., Inc., Buffalo, N. Y.  
 Self Vulcanizing Rubber Co., Inc., Chicago, Ill.  
 Separations Eng. Corp., New York, N. Y.  
 Simplicity Eng. Co., Durand, Mich.  
 Simplicity System Co., Chattanooga, Tenn.  
 Smith Eng. Wks., Milwaukee, Wis.  
 Sprout, Waldron & Co., Muncy, Ind.  
 Stearns Mfg. Co., Inc., Adrian, Mich.  
 Stephens-Adamson Mfg. Co., Aurora, Ill.  
 Straub Mfg. Co., Oakland, Calif.  
 Sturtevant Mill Co., Dorchester, Mass.  
 W. S. Tyler Co., Cleveland, O.  
 Universal Eng. Corp., Cedar Rapids, Ia.  
 Universal Vibrating Screen Co., Racine, Wis.  
 Webb City & Carterville Foundry & Mach. Wks., Webb City, Mo.  
 Western Mch. Co., San Francisco, Calif.  
 Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.  
 Wisconsin Foundry & Mach. Co., Madison, Wis.

**SCREW CONVEYORS (See Conveyors)**

**SCREWS (Set)**  
 Bristol Co., Waterbury, Conn.

**SCRUBBERS (Crushed Stone, Gravel)**  
 Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
 Earle C. Bacon, Inc., New York, N. Y.  
 Bodinson Mfg. Co., San Francisco, Calif.  
 The Columbus Conveyor Co., Columbus, O.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 Diamond Iron Wks., Inc., Minneapolis, Minn.  
 Eagle Iron Wks., Des Moines, Ia.  
 Greenville Mfg. Wks., Greenville, O.  
 Gruendler Crusher & Pulverizer Co., St. Louis, Mo.  
 Hardinge Co., Inc., York, Penna.  
 Iowa Mfg. Co., Cedar Rapids, Ia.  
 Link-Belt Co., Chicago, Ill.  
 McLanahan & Stone Corp., Hollidaysburg, Penna.  
 Maddox Foundry & Mach. Wks., Inc., Archer, Fla.  
 Mine & Smelter Supply Co., Denver, Colo.  
 Pennsylvania Crusher Co., Philadelphia, Penna.  
 Pioneer Eng. Wks., Inc., Minneapolis, Minn.

# DIRECTORY

Rogers Iron Wks., Joplin, Mo.  
Smith Eng. Wks., Milwaukee, Wis.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
W. S. Tyler Co., Cleveland, O.

## SEAL RINGS (Kiln)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
American Manganese Steel Div., Chicago Heights, Ill.  
F. L. Smith & Co., New York, N. Y.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Vulcan Iron Wks., Wilkes-Barre, Penna.

## SEMI-TRAILERS (Truck)

Easton Car and Construction Co., New York, N. Y.  
Hug Co., Highland, Ill.  
Sanford-Day Iron Wks., Inc., Knoxville, Tenn.  
Truck Equip. Co., Inc., Buffalo, N. Y.

## SEPARATORS (Air) (See Air Separators)

## SEPARATORS (Magnetic) (See Magnetic Separators)

## SEPARATORS (Slurry) (See Slurry Filters)

## SEPTIC TANK MOLDS (Concrete)

Ashland Vault Co., Ashland, O.  
Automatic Sealing Vault Co., Peru, Ind.  
Automatic Septic Tank Mold Co., Gallon, O.  
Baumgardner Concrete Prod. Co., Tiffin, O.  
Bennett-Barnes Co., Terre Haute, Ind.  
Unit System Septic Tanks Co., Oregon, Ill.  
York Automatic Sealing Vault Co., York, Penna.

## SEWER PIPE MACHINES (Concrete) (See Pipe Machinery)

## SHAFTING

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
American Brass Co., Waterbury, Conn.  
Earle C. Bacon, Inc., New York, N. Y.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Bethlehem Steel Co., Bethlehem, Penna.  
Bodinson Mfg. Co., San Francisco, Calif.  
Conveyor Co., Inc., Los Angeles, Calif.  
Dodge Mfg. Corp., Mishawaka, Ind.  
Jeffrey Mfg. Co., Columbus, O.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Link-Belt Co., Chicago, Ill.  
Mine & Smelter Supply Co., Denver, Colo.  
Republic Steel Corp., Cleveland, O.  
Sprout, Waldron & Co., Muncy, Penna.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Vulcan Iron Wks., Wilkes-Barre, Penna.  
Williams Patent Crusher & Pulverizer Co., St. Louis, Mo.  
Wood's T. B. Sons Co., Chambersburg, Penna.

## SHEAVES

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
American Hoist & Derrick Co., St. Paul, Minn.  
American Manganese Steel Div., Chicago Heights, Ill.  
Earle C. Bacon, Inc., New York, N. Y.  
Beaumont Birch Co., Philadelphia, Penna.  
Bethlehem Steel Co., Bethlehem, Penna.  
Bodinson Mfg. Co., San Francisco, Calif.  
Browning Mfg. Co., Inc., Maysville, Ky.  
Chicago Belting Co., Chicago, Ill.  
Columbus Steel Co., San Francisco, Calif. (U. S. Steel Corp. Sub.)  
Continental Gin Co., Birmingham, Ala.  
Dayton Rubber Mfg. Co., Dayton, O.  
Dobbie Foundry & Mach. Co., Niagara Falls, N. Y.  
Dodge Mfg. Corp., Mishawaka, Ind.  
Eagle Iron Wks., Des Moines, Ia.  
Ebel Hoist & Pump Co., Lansing, Mich.  
Erie Steel Construction Co., Erie, Penna.

Farrell-Cheek Steel Co., Sandusky, O.  
Frog Switch & Mfg. Co., Carlisle, Penna.  
Gates Rubber Co., Denver, Colo.  
Godfrey Conveyor Co., Elkhart, Ind.  
George Haiss Mfg. Co., New York, N. Y.  
Hetherington & Berner, Inc., Indianapolis, Ind.  
Jeffrey Mfg. Co., Columbus, O.  
W. A. Jones Foundry & Mach. Co., Chicago, Ill.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Kensington Steel Co., Chicago, Ill.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
Maddox Foundry & Mach. Wks., Inc., Archer, Fla.  
Meckum Eng. Co., Inc., Chicago, Ill.

## Mine & Smelter Supply Co., Denver, Colo.

Ottumwa Iron Wks., Ottumwa, Ia.  
Pettibone-Mulliken Corp., Chicago, Ill.

Rainbow Concrete Mach. Co., Dunellen, N. J.

Robins Conveying Belt Co., Passaic, N. J.

Rockwood Mfg. Co., Indianapolis, Ind.

John A. Roebbing's Sons Co., Trenton, N. J.

Sanford-Day Iron Wks., Inc., Knoxville, Tenn.

Sauerman Bros., Inc., Chicago, Ill.

Stephens-Adamson Mfg. Co., Aurora, Ill.

Sullivan Mch. Co., Michigan City, Ind.

Vulcan Iron Wks., Wilkes-Barre, Penna.

Webster Mfg., Inc., Tiffin, O.

H. W. Weimer Co., Milwaukee, Wis.

Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.

Wisconsin Foundry & Mach. Co., Madison, Wis.

Wood's T. B. Sons Co., Chambersburg, Penna.

Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.

Wisconsin Foundry & Mach. Co., Madison, Wis.

Wood's T. B. Sons Co., Chambersburg, Penna.

Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.

Wisconsin Foundry & Mach. Co., Madison, Wis.

Wood's T. B. Sons Co., Chambersburg, Penna.

Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.

Wisconsin Foundry & Mach. Co., Madison, Wis.

Wood's T. B. Sons Co., Chambersburg, Penna.

Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.

Wisconsin Foundry & Mach. Co., Madison, Wis.

Wood's T. B. Sons Co., Chambersburg, Penna.

Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.

Wisconsin Foundry & Mach. Co., Madison, Wis.

Wood's T. B. Sons Co., Chambersburg, Penna.

Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.

Wisconsin Foundry & Mach. Co., Madison, Wis.

Wood's T. B. Sons Co., Chambersburg, Penna.

Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.

Wisconsin Foundry & Mach. Co., Madison, Wis.

Wood's T. B. Sons Co., Chambersburg, Penna.

Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.

Wisconsin Foundry & Mach. Co., Madison, Wis.

Wood's T. B. Sons Co., Chambersburg, Penna.

Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.

Stephens-Adamson Mfg. Co., Aurora, Ill.  
Thew Shovel Co., Lorain, O.  
Universal Power Shovel Co., Milwaukee, Wis.  
Western Mch. Co., San Francisco, Calif.

## SHOVELS (Tractor)

Browning Crane & Shovel Co., Cleveland, O.  
Butler Bin Co., Waukesha, Wis.  
General Excavator Co., Marion, O.  
Hanson Excavator Wks., Tiffin, O.  
Housely Co., Libertyville, Ill.  
Koehring Co., Milwaukee, Wis.  
Lima Locomotive Wks., Inc., Shovel and Crane Div., Lima, O.  
Manitowoc Eng. Wks., Manitowoc, Wis.  
Northwest Eng. Co., Chicago, Ill.  
Osgood Co., Marion, O.  
Towmotor Co., Cleveland, O.  
Trackson Co., Milwaukee, Wis.  
White Mfg. Co., Elkhart, Ind.

## SHOVELS (Truck)

Bay City Shovels, Inc., Bay City, Mich.  
Browning Crane & Shovel Co., Cleveland, O.  
Bucyrus-Erie Co., S. Milwaukee, Wis.  
Byers Mach. Co., Ravenna, O.  
Hanson Excavator Wks., Tiffin, O.  
Harnischfeger Corp., Milwaukee, Wis.  
The Hough Co., Libertyville, Ill.  
Koehring Co., Milwaukee, Wis.  
Lima Locomotive Wks., Inc., Shovel and Crane Div., Lima, O.  
Manitowoc Eng. Wks., Manitowoc, Wis.  
Northwest Eng. Co., Chicago, Ill.  
Osgood Co., Marion, O.  
Quickway Truck Shovel Co., Denver, Colo.  
Thew Shovel Co., Lorain, O.

## SHREDDERS (Plaster)

Jeffrey Mfg. Co., Columbus, O.  
Pennsylvania Crusher Co., Philadelphia, Penna.

## SIEVES (Testing)

Buffalo Wire Wks. Co., Buffalo, N. Y.  
Harrington & King Perforating Co., Chicago, Ill.  
Mine & Smelter Supply Co., Denver, Colo.  
Newark Wire Cloth Co., Newark, N. J.  
Sturtevant Mill Co., Dorchester, Mass.  
W. S. Tyler Co., Cleveland, O.  
Universal Vibrating Screen Co., Racine, Wis.

## SILL FORMS (Concrete)

Miles Mfg. Co., Jackson, Mich.

## SILLO STAVE MACHINES (Concrete)

Besser Mfg. Co., Alpena, Mich.  
Multiplex Concrete Mch. Co., Elmore, O.  
Stearns Mfg. Co., Inc., Adrian, Mich.

## SILOS (Storage)

Beaumont Birch Co., Philadelphia, Penna.  
Blystone Mfg. Co., Cambridge Springs, Penna.  
Bodinson Mfg. Co., San Francisco, Calif.  
Burrell Eng. & Construction Co., Chicago, Ill.  
Godfrey Conveyor Co., Elkhart, Ind.  
Lancaster Iron Wks., Inc., Lancaster, Penna.  
Long, M. A. Co., Baltimore, Md.  
McDonald Eng. Co., Chicago, Ill.  
Marietta Concrete Corp., Marietta, O.  
The Neff & Fry Co., Camden, O.

## SKIDS (Lift Truck)

Barrett-Cravens Co., Chicago, Ill.  
The Chase Foundry & Mfg. Co., Columbus, O.  
Easton Car & Construction Co., New York, N. Y.  
Lewis-Shepard Sales Corp., Watertown, Mass.  
Superior Body Co., Inc., Marion, Ind.

## SKIPS (Hoist)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Beaumont Birch Co., Philadelphia, Penna.  
The Chase Foundry & Mfg. Co., Columbus, O.  
Clyde Iron Wks., Inc., Duluth, Minn.  
Eagle Iron Wks., Des Moines, Ia.  
Garlinghouse Bros., Los Angeles, Calif.  
Godfrey Conveyor Co., Elkhart, Ind.

Jeffrey Mfg. Co., Columbus, O.  
Link-Belt Co., Chicago, Ill.  
Maddox Foundry & Mach. Wks., Inc., Archer, Fla.  
Mine & Smelter Supply Co., Denver, Colo.  
Multiplex Concrete Mch. Co., Elmore, O.  
Ottumwa Iron Wks., Ottumwa, Ia.  
Robins Conveying Belt Co., Passaic, N. J.  
Rogers Iron Wks., Joplin, Mo.  
Stearns Mfg. Co., Inc., Adrian, Mich.  
Stearns-Rogers Mfg. Co., Denver, Colo.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Sterling Mch. Corp., Kansas City, Mo.  
Webster Mfg., Inc., Tiffin, O.  
The Wellman Eng. Co., Cleveland, O.

## SLAKERS (See Hydrators, Lime)

## SLINGS (Wire Rope) (See Wire Rope Slings)

## SLUGS (Grinding) (See Grinding Media)

## SLURRY AGITATORS

Denver Equip. Co., Denver, Colo.  
The Dorr Co., Inc., New York, N. Y.  
Elmco Corp., Salt Lake City, Utah.  
Hardinge Co., Inc., York, Penna.  
Manitowoc Eng. Wks., Manitowoc, Wis.  
Patterson Foundry & Mach. Co., E. Liverpool, O.  
F. L. Smith & Co., New York, N. Y.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Western Mch. Co., San Francisco, Calif.

## SLURRY FILTERS

Denver Equip. Co., Denver, Colo.  
Elmco Corp., Salt Lake City, Utah.  
Oliver United Filters, Inc., New York, N. Y.  
Patterson Foundry & Mach. Co., E. Liverpool, O.

## SLURRY MIXERS

The Dorr Co., Inc., New York, N. Y.  
Elmco Corp., Salt Lake City, Utah.  
Hardinge Co., Inc., York, Penna.  
Patterson Foundry & Mach. Co., E. Liverpool, O.  
F. L. Smith & Co., New York, N. Y.  
T. L. Smith Co., Milwaukee, Wis.  
Traylor Eng. & Mfg. Co., Allentown, Penna.

## SLURRY PUMPS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
American Manganese Steel Div., Chicago Heights, Ill.  
De Laval Steam Turbine Co., Trenton, N. J.  
Deming Co., Salem, O.  
Denver Equip. Co., Denver, Colo.  
Lawrence Mach. & Pump Corp., Lawrence, Mass.  
Mine & Smelter Supply Co., Denver, Colo.  
Morris Mach. Wks., Baldwinville, N. Y.  
Oliver United Filters, Inc., New York, N. Y.  
Patterson Foundry & Mach. Co., E. Liverpool, O.  
Schneble Co., Claude B., Chicago, Ill.  
F. L. Smith & Co., New York, N. Y.  
Western Mch. Co., San Francisco, Calif.  
A. R. Willey & Sons, Inc., Denver, Colo.

## SLURRY SCREENS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Denver Equip. Co., Denver, Colo.  
Hardinge Co., Inc., York, Penna.  
Link-Belt Co., Philadelphia, Penna.  
Mine & Smelter Supply Co., Denver, Colo.

Patterson Foundry & Mach. Co., E. Liverpool, O.

Productive Equip. Corp., Chicago, Ill.

W. S. Tyler Co., Cleveland, O.

Western Mch. Co., San Francisco, Calif.

## SLURRY SEPARATORS

Patterson Foundry & Mach. Co., E. Liverpool, O.  
Separation Process Co., Catawauqua, Penna.  
F. L. Smith & Co., New York, N. Y.

## SLURRY THICKENERS

Denver Equip. Co., Denver, Colo.  
The Dorr Co., Inc., New York, N. Y.  
Elmco Corp., Salt Lake City, Utah.  
Hardinge Co., Inc., York, Penna.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Western Mch. Co., San Francisco, Calif.

# DIRECTORY

## SMOKESTACKS

Alpha Tank & Sheet Metal Mfg. Co., St. Louis, Mo.  
Bethlehem Steel Co., Bethlehem, Penna.  
Chicago Bridge & Iron Co., Chicago, Ill.  
Hendrick Mfg. Co., Carbondale, Penna.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Lancaster Iron Wks., Inc., Lancaster, Penna.  
Maddox Foundry & Mach. Wks., Inc., Archer, Fla.  
National Steel Prod., Kansas City, Mo.  
Stearns-Rogers Mfg. Co., Denver, Colo.  
Superior Metal Prod. Co., Inc., Marion, Ind.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Webber Equip. Co., New York, N. Y.  
Wisconsin Foundry & Mach. Co., Madison, Wis.

## SOCKETS (Wire Rope)

American Steel & Wire Co., Cleveland, O.  
Bethlehem Steel Co., Bethlehem, Penna.  
Farrell-Cheek Steel Co., Sandusky, O.  
Interstate Equip. Corp., Elizabeth, N. J.  
Thomas Laughlin Co., Portland, Me.  
Mine & Smelter Supply Co., Denver, Colo.  
John A. Roebbing's Sons Co., Trenton, N. J.

## SOFT STONE ELIMINATORS (See also Scrubbers)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Conveyor Co., Inc., Los Angeles, Calif.  
Greenville Mfg. Wks., Greenville, O.  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
Harding Co., Inc., York, Penna.  
Kensington Steel Co., Chicago, Ill.  
Pennsylvania Crusher Co., Philadelphia, Penna.  
Smith Eng. Wks., Milwaukee, Wis.  
Stephens-Adamson Mfg. Co., Aurora, Ill.

## SPEED REDUCERS (See also Gear Reducers)

Abart Gear & Mach. Co., Chicago, Ill.  
Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Earle C. Bacon, Inc., New York, N. Y.  
Cleveland Worm & Gear Co., Cleveland, O.  
Continental Gin Co., Birmingham, Ala.  
De Laval Steam Turbine Co., Trenton, N. J.  
The Falk Corp., Milwaukee, Wis.  
Farrell-Birmingham Co., Inc., Buffalo, N. Y.  
Foote Bros. Gear & Mach. Corp., Chicago, Ill.  
Gears & Forgings, Inc., Cleveland, O.  
Huron Industries, Inc., Alpena, Mich.  
D. O. James Mfg. Co., Chicago, Ill.  
The Jeffrey Mfg. Co., Columbus, O.  
W. A. Jones Foundry & Mach. Co., Chicago, Ill.  
Link-Belt Co., Philadelphia, Penna.  
Link-Track Eng. Co., Chicago, Ill.  
Mine & Smelter Supply Co., Denver, Colo.  
Ottumwa Iron Wks., Ottumwa, Ia.  
Palmer-Bee Co., Detroit, Mich.  
Patterson Foundry & Mach. Co., E. Liverpool, O.  
Philadelphia Gear Wks., Philadelphia, Penna.  
Simplicity System Co., Chattanooga, Tenn.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Twin Disc Clutch Co., Racine, Wis.  
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.  
Wood's, T. H. Sons Co., Chambersburg, Penna.

## SPOUTS (See also Chutes)

Alpha Tank & Sheet Metal Mfg. Co., St. Louis, Mo.  
American Manganese Steel Div., Chicago Heights, Ill.  
L. Burmeister Co., Milwaukee, Wis.  
Continental Gin Co., Birmingham, Ala.  
Conveyor Co., Inc., Los Angeles, Calif.  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
George Halsz Mfg. Co., New York, N. Y.

Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Link-Belt Co., Chicago, Ill.  
Ransome Concrete Mch. Co., Dunellen, N. J.  
Traylor Eng. & Mfg. Co., Allentown, Penna.

## SPROCKETS

American Manganese Steel Div., Chicago Heights, Ill.  
Earle C. Bacon, Inc., New York, N. Y.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Bodinson Mfg. Co., San Francisco, Calif.  
Chain Belt Co., Milwaukee, Wis.  
Continental Gin Co., Birmingham, Ala.  
Conveyor Co., Inc., Los Angeles, Calif.  
Diamond Chain & Mfg. Co., Indianapolis, Ind.  
Erie Steel Foundry Co., Portland, Ore.  
Farrell-Cheek Steel Co., Sandusky, O.  
Frog Switch & Mfg. Co., Carlisle, Penna.  
Gründler Crusher & Pulverizer Co., St. Louis, Mo.  
The Jeffrey Mfg. Co., Columbus, O.  
W. A. Jones Foundry & Mach. Co., Chicago, Ill.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Kensington Steel Co., Chicago, Ill.  
Link-Belt Co., Chicago, Ill.  
McLanahan & Stone Corp., Hollidaysburg, Penna.  
Mine & Smelter Supply Co., Denver, Colo.  
Palmer-Bee Co., Detroit, Mich.  
Pittibone-Mulliken Corp., Chicago, Ill.  
Pioneer Eng. Wks., Inc., Minneapolis, Minn.  
Rogers Iron Wks., Joplin, Mo.  
Sprout, Waldron & Co., Muncy, Penna.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Taylor-Wharton Iron & Steel Co., High Bridge, N. J.  
Union Chain & Mfg. Co., Sandusky, O.  
Webster Mfg. Inc., Tiffin, O.  
Whitney Chain & Mfg. Co., Hartford, Conn.  
Wisconsin Foundry & Mach. Co., Madison, Wis.

## STANDPIPES

Alpha Tank & Sheet Metal Mfg. Co., St. Louis, Mo.  
Chicago Bridge & Iron Co., Chicago, Ill.  
Lancaster Iron Wks., Inc., Lancaster, Penna.  
Pittsburgh-Des Moines Steel Co., Pittsburgh, Penna.

## STARTERS (Motor) (See Electric Switch Gear)

## STEAM ENGINES (Stationary) (See Engines)

## STEEL, BAR

Bethlehem Steel Co., Bethlehem, Penna.  
Carnegie-Illinois Steel Corp., Pittsburgh, Penna.  
Crucible Steel Co. of America, New York, N. Y.  
Ingersoll-Rand Co., New York, N. Y.  
Manganese Steel Forge Co., Philadelphia, Pa.  
Mine & Smelter Supply Co., Denver, Colo.  
Republic Steel Corp., Cleveland, O.  
Joseph T. Ryerson & Sons, Inc., Chicago, Ill.  
Timken Roller Bearing Co., Canton, O.

## STEEL (Electric Furnace)

Alloy Cast Steel Co., Marion, O.  
American Manganese Steel Div., Chicago Heights, Ill.  
Bethlehem Steel Co., Bethlehem, Penna.  
Carnegie-Illinois Steel Corp., Pittsburgh, Penna.  
Chicago Steel Foundry Co., Chicago, Ill.  
Crucible Steel Co. of America, New York, N. Y.  
Manganese Steel Forge Co., Philadelphia, Penna.  
Mine & Smelter Supply Co., Denver, Colo.  
Republic Steel Corp., Cleveland, O.  
Taylor-Wharton Iron & Steel Co., High Bridge, N. J.  
Timken Roller Bearing Co., Canton, O.

## STEEL (Non-Abrasive)

American Manganese Steel Div., Chicago Heights, Ill.  
Carnegie-Illinois Steel Corp., Pittsburgh, Penna.

Central Iron & Steel Co., Harrisburg, Penna.  
Crucible Steel Co. of America, New York, N. Y.  
Jones & Laughlin Steel Corp., Muncy, Penna.  
Manganese Steel Forge Co., Philadelphia, Pa.  
Mine & Smelter Supply Co., Denver, Colo.  
Republic Steel Corp., Cleveland, O.  
Timken Roller Bearing Co., Canton, O.

## STEEL (Open-Hearth)

Earle C. Bacon, Inc., New York, N. Y.  
Bethlehem Steel Co., Bethlehem, Penna.  
Birdsboro Steel Foundry & Mach. Co., Birdsboro, Penna.  
Carnegie-Illinois Steel Corp., Pittsburgh, Penna.  
Central Iron & Steel Co., Harrisburg, Penna.  
Commercial Steel Casting Co., Marion, O.  
Crucible Steel Co. of America, New York, N. Y.  
Jones & Laughlin Steel Corp., Muncy, Penna.  
Lukens Steel Co., Coatesville, Penna.  
Mine & Smelter Supply Co., Denver, Colo.  
Pittibone-Mulliken Corp., Chicago, Ill.  
Republic Steel Corp., Cleveland, O.  
Timken Roller Bearing Co., Canton, O.

## STEEL PLATES

Earle C. Bacon, Inc., New York, N. Y.  
Bethlehem Steel Co., Bethlehem, Penna.  
By-Products Steel Corp., Coatesville, Penna.  
Carnegie-Illinois Steel Corp., Pittsburgh, Penna.  
Central Iron & Steel Co., Harrisburg, Penna.  
Crucible Steel Co. of America, New York, N. Y.  
Lukens Steel Co., Coatesville, Penna.  
Mine & Smelter Supply Co., Denver, Colo.  
Republic Steel Corp., Cleveland, O.  
Joseph T. Ryerson & Sons, Inc., Chicago, Ill.  
Superior Metal Prod. Co., Inc., Marion, Ind.

## STEEL (Special Alloy)

Alloy Cast Steel Co., Marion, O.  
American Manganese Steel Div., Chicago Heights, Ill.  
Earle C. Bacon, Inc., New York, N. Y.  
Bethlehem Steel Co., Bethlehem, Penna.  
Carnegie-Illinois Steel Co., Pittsburgh, Penna.  
Central Iron & Steel Co., Harrisburg, Penna.  
Chicago Steel Foundry Co., Chicago, Ill.  
Crucible Steel Co. of America, New York, N. Y.  
Kensington Steel Co., Chicago, Ill.  
Lukens Steel Co., Coatesville, Penna.  
Manganese Steel Forge Co., Philadelphia, Penna.  
Mine & Smelter Supply Co., Denver, Colo.  
Republic Steel Corp., Cleveland, O.  
Taylor-Wharton Iron & Steel Co., High Bridge, N. J.  
Timken Roller Bearing Co., Canton, O.

## STEP FORMS (Concrete)

Miles Mfg. Company, Jackson, Mich.

## STOKERS (Coal, for Lime Kilns, Etc.)

Combustion Eng. Corp., Chicago, Ill.  
H. D. Conkey & Co., Mendota, Ill.  
Diamond Iron Wks., Inc., Minneapolis, Minn.  
Fairbanks, Morse & Co., Chicago, Ill.  
Fireman Mfg. Co., Cleveland, O.  
Link-Belt Co., Chicago, Ill.  
Mine & Smelter Supply Co., Denver, Colo.  
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.

## TORAGE SYSTEMS (Radial)

Fred T. Kern Co., Port Washington, Wis.

## STRANDS (Wire)

Bethlehem Steel Co., Bethlehem, Penna.  
Broderick & Bascom Rope Co., St. Louis, Mo.  
John A. Roebbing's Sons Co., Trenton, N. J.  
Wickwire Spencer Steel Co., New York, N. Y.

## STRETCHER OUTFITS (Safety Equipment)

Boyer-Campbell Co., Detroit, Mich.  
Davis Emergency Equip. Co., Inc., Newark, N. J.  
Mine & Smelter Supply Co., Denver, Colo.  
Mine Safety Appliances Co., Pittsburgh, Penna.  
Pulmonan Safety Equip. Corp., Brooklyn, N. Y.

## STRUCTURAL STEEL FABRICATION

American Steel Dredge Co., Inc., Ft. Wayne, Ind.  
Bethlehem Steel Co., Bethlehem, Penna.  
L. Burmeister Co., Milwaukee, Wis.  
Butler Bldg. Co., Waukesha, Wis.  
Conveyor Co., Inc., Los Angeles, Calif.  
Dobbie Foundry & Mach. Co., Niagara Falls, N. Y.  
Eagle Iron Wks., Des Moines, Ia.  
Elmer Corp., Salt Lake City, Utah.  
Greenville Mfg. Wks., Greenville, O.  
Hendrick Mfg. Co., Carbondale, Penna.  
Joseph T. Ryerson & Sons, Inc., Chicago, Ill.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Superior Metal Prod. Co., Inc., Marion, Ind.

## STUCCO COLORS (See Cement and Mortar Colors)

## SWITCHBOARDS (See Electric Switch Gear)

## SWITCHES (Track)

Bethlehem Steel Co., Bethlehem, Penna.  
Carnegie-Illinois Steel Corp., Pittsburgh, Penna.  
L. B. Foster Co., Pittsburgh, Penna.  
Mine & Smelter Supply Co., Denver, Colo.  
Stearns Mfg. Co., Inc., Adrian, Mich.

## TACHOMETERS (Counters, Etc.)

Bristol Co., Waterbury, Conn.  
Brown Instrument Co., Philadelphia, Penna.  
Ideal Commutator Dresser Co., Sycamore, Ill.  
Mine & Smelter Supply Co., Denver, Colo.  
Western Elec. Instrument Corp., Newark, N. J.  
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.

## TAMPERS (Concrete, Hand & Power)

Anchor Concrete Mch. Co., Columbus, O.  
Besser Mfg. Co., Alpena, Mich.  
Blystone Mfg. Co., Cambridge Springs, Penna.  
The Kent Mach. Co., Cuyahoga Falls, O.  
Stearns Mfg. Co., Inc., Adrian, Mich.

## TANKS (Air)

Allen Cone & Mch. Co., New York, N. Y.  
Alpha Tank & Sheet Metal Mfg. Co., St. Louis, Mo.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Bethlehem Steel Co., Bethlehem, Penna.  
Blaw-Knox Co., Blawnox, Penna.  
Combustion Eng. Corp., Chicago, Ill.  
Curtis Pneumatic Mch., Inc., St. Louis, Mo.  
Gardner-Denver Co., Quincy, Ill.  
Ingersoll-Rand Co., New York, N. Y.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Lancaster Iron Wks., Inc., Lancaster, Penna.  
Littleford Bros., Inc., Cincinnati, O.  
Maddox Foundry & Mach. Wks., Inc., Archer, Fla.  
Manitowoc Eng. Wks., Manitowoc, Wis.  
National Steel Prod. Co., Kansas City, Mo.  
Pittsburgh-Des Moines Steel Co., Pittsburgh, Penna.  
Superior Metal Prod. Co., Inc., Marion, Ind.  
Traylor Eng. & Mfg. Co., Allentown, Penna.  
Western Mch. Co., San Francisco, Calif.

## TANKS (Gasoline)

Alpha Tank & Sheet Metal Mfg. Co., St. Louis, Mo.  
Bethlehem Steel Co., Bethlehem, Penna.  
Hell Co., Milwaukee, Wis.  
Lancaster Iron Wks., Inc., Lancaster, Penna.

# DIRECTORY

National Steel Prod. Co., Kansas City, Mo.  
Pittsburgh-Des Moines Steel Co., Pittsburgh, Penna.  
Superior Metal Prod. Co., Inc., Marion, Ind.

## TANKS (Sand Settling)

Alpha Tank & Sheet Metal Mfg. Co., St. Louis, Mo.  
Bodinson Mfg. Co., San Francisco, Calif.  
Conveyor Co., Inc., Los Angeles, Calif.  
Deister Mach. Co., Ft. Wayne, Ind.  
Link-Belt Co., Chicago, Ill.  
Maddox Foundry & Mach. Wks., Inc., Archer, Fla.  
Meckum Eng., Inc., Chicago, Ill.  
Mine & Smelter Supply Co., Denver, Colo.  
National Steel Prod. Co., Kansas City, Mo.  
Parsons Eng. Corp., Cleveland, O.  
Smith Eng. Wks., Milwaukee, Wis.  
Superior Metal Prod. Co., Inc., Marion, Ind.

## TANKS (Storage)

Allen Cone & Mch. Co., New York, N. Y.  
Alpha Tank & Sheet Metal Mfg. Co., St. Louis, Mo.  
C. O. Bartlett & Snow Co., Cleveland, O.  
Bethlehem Steel Co., Bethlehem, Penna.  
Blaw-Knox Co., Blawnox, Penna.  
Bodinson Mfg. Co., San Francisco, Calif.  
Chicago Bridge & Iron Co., Chicago, Ill.  
Combustion Eng. Corp., Chicago, Ill.  
The Dorr Co., Inc., New York, N. Y.  
Hell Co., Milwaukee, Wis.  
The Jeffrey Mfg. Co., Columbus, O.  
Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
Lancaster Iron Wks., Inc., Lancaster, Penna.  
Littleford Bros., Inc., Cincinnati, O.  
National Steel Prod. Co., Kansas City, Mo.  
The Neff & Fry Co., Camden, O.  
The Nicholson Co., Inc., New York, N. Y.  
Parsons Eng. Corp., Cleveland, O.  
Patterson Foundry & Mach. Co., E. Liverpool, O.  
Pittsburgh-Des Moines Steel Co., Pittsburgh, Penna.  
Schneible Co., Chicago, Ill.  
Simplicity System Co., Chattanooga, Tenn.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Superior Body Co., Marion, Ind.  
Superior Metal Prod. Co., Inc., Marion, Ind.  
Traylor Eng. & Mfg. Co., Allentown, Penna.

## THERMOCOUPLES (Pyrometers)

Bristol Co., Waterbury, Conn.  
Brown Instrument Co., Philadelphia, Penna.  
General Elec. Co., Schenectady, N. Y.  
J-B-T Instruments, Inc., New Haven, Conn.  
Leeds & Northrup Co., Philadelphia, Penna.  
Mine & Smelter Supply Co., Denver, Colo.  
C. J. Tagliabue Mfg. Co., Brooklyn, N. Y.  
Tammis Silica Co., Chicago, Ill.  
Wheelco Instruments Co., Chicago, Ill.

## THICKENERS (See Slurry Thickeners)

## THIMBLES (Wire Rope)

American Steel & Wire Co., Cleveland, O.  
Bethlehem Steel Co., Bethlehem, Penna.  
Thomas Laughlin Co., Portland, Me.  
Mine & Smelter Supply Co., Denver, Colo.  
John A. Roebbing's Sons Co., Trenton, N. J.

## TIES (Bag)

Columbus Steel Co., San Francisco, Calif.  
B. F. Gump Co., Chicago, Ill.

## TILE (Pipe) MACHINES

W. E. Dunn Mfg. Co., Holland, Mich.  
Quinn Wire & Iron Wks., Boone, Ia.  
Gates Rubber Co., Denver, Colo.  
Goodyear Tire & Rubber Co., Akron, O.  
United States Rubber Co., New York, N. Y.

## TOWERS (Structural Steel)

American Steel Dredge Co., Inc., Ft. Wayne, Ind.  
Bethlehem Steel Co., Bethlehem, Penna.  
Blaw-Knox Co., Blawnox, Penna.  
Conveyor Co., Inc., Los Angeles, Calif.  
Hendrick Mfg. Co., Carbondale, Penna.  
Ransome Concrete Mch. Co., Dunellen, N. J.  
Robins Conveying Belt Co., Passaic, N. J.  
Superior Metal Prod. Co., Inc., Marion, Ind.  
Webster Mfg., Inc., Tiffin, O.

## TRACK & TRACK EQUIPMENT

Atlas Car & Mfg. Co., Cleveland, O.  
Bethlehem Steel Co., Bethlehem, Penna.  
Carnegie-Illinois Steel Corp., Pittsburgh, Penna.  
Central Frog & Switch Co., Cincinnati, O.  
The Chase Foundry & Mfg. Co., Columbus, O.  
Columbus Steel Co., San Francisco, Calif.  
L. B. Foster Co., Pittsburgh, Penna.  
Miles Mfg. Co., Jackson, Mich.  
National Malleable & Steel Castings Co., Cleveland, O.  
Pettibone-Mulliken Corp., Chicago, Ill.  
Stearns Mfg. Co., Inc., Adrian, Mich.  
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.  
Clyde Iron Wks., Inc., Duluth, Minn.  
Edelblute Mfg. Co., Reynoldsville, Penna.  
Nordberg Mfg. Co., Milwaukee, Wis.

## TRACK SYSTEMS (Overhead)

Godfrey Conveyors Co., Elkhart, Ind.

## TRACTORS (Electric)

Atlas Car & Mfg. Co., Cleveland, O.  
Easton Car & Construction Co., New York, N. Y.

## TRACTORS (Gasoline, Diesel)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Caterpillar Tractor Co., E. Peoria, Ill.  
Cleveland Tractor Co., Cleveland, O.  
Continental Motors Corp., Detroit, Mich.  
The Fate-Root-Heath Co., Plymouth, O.  
Hug Co., Highland, Ill.  
International Harvester Co., Chicago, Ill.  
Mack Mfg. Corp., Long Island City, N. Y.  
Marmon-Herrington Co., Inc., Indianapolis, Ind.  
Minneapolis-Moline Power Implement Co., Minneapolis, Minn.  
Plymouth Locomotive Wks., Plymouth, O.  
Towmotor Co., Cleveland, O.

## TRAILER BODIES (See Bodies)

## TRAILERS & SEMI-TRAILERS (Motor Truck)

Athy Truss Wheel Co., Chicago, Ill.  
Atlas Car & Mfg. Co., Cleveland, O.  
Bay City Shovels, Inc., Bay City, Mich.  
Buckeye Traction Ditcher Co., Findlay, O.  
Easton Car & Construction Co., New York, N. Y.  
Euclid Road Mch. Co., Cleveland, O.  
Federal Motor Truck Co., Detroit, Mich.  
Ford Motor Co., Dearborn, Mich.  
Ford Wood Industries, Inc., Detroit, Mich.  
General Motors Truck Co., Detroit, Mich.  
Hanson Excavator Wks., Tiffin, O.  
Hell Co., Milwaukee, Wis.  
Hug Co., Highland, Ill.  
N. Y. Sanford-Day Iron Wks., Inc., Knoxville, Tenn.  
A. Streich & Bros. Co., Oshkosh, Wis.  
Truck Equip. Co., Inc., Buffalo, N. Y.

## TRAMWAY (Aerial) (See Aerial Tramways)

## TRANSFORMERS (Electric) (See Electric Transformers)

## TRANSMISSION MACHINERY (See Gears, Etc.)

## TRANSMISSIONS (Variable Speed)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Continental Gin Co., Birmingham, Ala.  
Conveyor Co., Inc., Los Angeles, Calif.  
Diamond Iron Wks., Inc., Minneapolis, Minn.  
Graham Transmissions, Inc., Milwaukee, Wis.  
Ideal Commutator Dresser Co., Sycamore, Ill.  
Link-Belt Co., Philadelphia, Penna.  
Mine & Smelter Supply Co., Denver, Colo.  
Standard Transmission Equip. Co., Los Angeles, Calif.  
Stephens-Adamson Mfg. Co., Aurora, Ill.

## TRANSPORT SYSTEMS (Air) (See Air Conveyors)

## TRENCING MACHINES

Keystone Driller Co., Beaver Falls, Penna.  
Northwest Eng. Co., Chicago, Ill.

## TRIPPERS (Belt) (See Conveyor Belt Trippers)

## TROLLEYS (I-Beam)

Chisholm-Moore Hoist Corp., Tonawanda, N. Y.  
Coffing Hoist Co., Danville, Ill.  
H. D. Conkey & Co., Mendota, Ill.  
Curtis Pneumatic Mch., Inc., St. Louis, Mo.  
Godfrey Conveyor Co., Elkhart, Ind.  
The Jeffrey Mfg. Co., Columbus, O.  
Louden Mch. Co., Fairfield, Ia.  
Mine & Smelter Supply Co., Denver, Colo.  
Palmer-Bee Co., Detroit, Mich.

## TROUGHS (See also Chutes)

Continental Gin Co., Birmingham, Ala.  
Godfrey Conveyor Co., Elkhart, Ind.  
The Jeffrey Mfg. Co., Columbus, O.  
National Steel Prod. Co., Kansas City, Mo.  
Stephens-Adamson Mfg. Co., Aurora, Ill.

## TRUCKS (Agitator)

Blaw-Knox Co., Blawnox, Penna.  
Concrete Transport Mixer Co., St. Louis, Mo.  
Jaeger Mach. Co., Columbus, O.  
Sterling Motors Corp., Milwaukee, Wis.

## TRUCKS (Dump) (See Motor Trucks)

## TRUCKS (Electric)

Atlas Car & Mfg. Co., Cleveland, O.  
Barrett-Cravens Co., Chicago, Ill.  
Continental Motors Corp., Detroit, Mich.  
Easton Car & Construction Co., New York, N. Y.  
Elwell-Parker Electric Co., Cleveland, O.

## TRUCKS (Hand)

Barrett-Cravens Co., Chicago, Ill.  
The Chase Foundry & Mfg. Co., Columbus, O.  
Howe Scale Co., Rutland, Vt.  
Mine & Smelter Supply Co., Denver, Colo.  
Multiplex Concrete Mch. Co., Elmore, O.  
Standard Pressed Steel Co., Jenkintown, Penna.  
Stearns Mfg. Co., Inc., Adrian, Mich.

## TRUCKS (Industrial)

Barrett-Cravens Co., Chicago, Ill.  
Bethlehem Steel Co., Bethlehem, Penna.  
Buda Co., Harvey, Ill.  
The Chase Foundry & Mfg. Co., Columbus, O.  
Easton Car & Construction Co., New York, N. Y.  
Elwell-Parker Elec. Co., Cleveland, O.  
The Fate-Root-Heath Co., Plymouth, O.  
Howe Scale Co., Rutland, Vt.  
Lewis-Shepard Sales Corp., Watertown, Mass.  
Multiplex Concrete Mch. Co., Elmore, O.  
Plymouth Locomotive Wks., Plymouth, O.  
Standard Pressed Steel Co., Jenkintown, Penna.  
Towmotor Co., Cleveland, O.  
Willamette Hyster Co., Portland, Ore.

## TRUCKS (Lift)

Barrett-Cravens Co., Chicago, Ill.  
Elwell-Parker Elec. Co., Cleveland, O.  
Mine & Smelter Supply Co., Denver, Colo.

Multiplex Concrete Mch. Co., Elmore, O.  
Stearns Mfg. Co., Inc., Adrian, Mich.

Towmotor Co., Cleveland, O.  
Willamette Hyster Co., Portland, Ore.

## TRUCKS (Mixer Body) (See Motor Truck Concrete Mixers)

## TRUCKS (Motor) (See Motor Trucks)

## TURBINES (Water)

Dean Hill Pump Co., Anderson, Ind.  
De Laval Steam Turbine Co., Trenton, N. J.  
B. F. Sturtevant Co., Boston, Mass.  
Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.

## TURNBUCKLES

Atlas Car & Mfg. Co., Cleveland, O.  
Bethlehem Steel Co., Bethlehem, Penna.  
Thomas Laughlin Co., Portland, Maine.  
Mine & Smelter Supply Co., Denver, Colo.  
John A. Roebbing's Sons Co., Trenton, N. J.

## TURNABLES

Atlas Car & Mfg. Co., Cleveland, O.  
The Chase Foundry & Mfg. Co., Columbus, O.

## UNLOADERS (Boat)

Elmo Corp., Salt Lake City, Utah.  
Fuller Co., Catasaqua, Penna.  
Godfrey Conveyor Co., Elkhart, Ind.  
Jeffrey Mfg. Co., Columbus, O.  
Link-Belt Co., Chicago, Ill.  
Robins Conveying Belt Co., Passaic, N. J.  
Wellman Eng. Co., Cleveland, O.

## UNLOADERS (Box Car)

C. O. Bartlett & Snow Co., Cleveland, O.  
Butler Bin Co., Waukesha, Wis.  
Continental Gin Co., Birmingham, Ala.  
Conveyors Co., Inc., Los Angeles, Calif.  
Elmo Corp., Salt Lake City, Utah.  
Erie Steel Construction Co., Erie, Penna.  
Fairfield Eng. Co., Marion, O.  
Fuller Co., Catasaqua, Penna.  
Godfrey Conveyor Co., Elkhart, Ind.  
George Haiss Mfg. Co., New York, N. Y.

Jeffrey Mfg. Co., Columbus, O.  
Link-Belt Co., Philadelphia, Penna.  
Link-Track Eng. Co., Chicago, Ill.  
Patterson Foundry & Mach. Co., E. Liverpool, O.  
Richardson Scale Co., Clifton, N. J.  
Stephens-Adamson Mfg. Co., Aurora, Ill.  
Webster Mfg. Inc., Tiffin, O.  
Willamette Hyster Co., Portland, Ore.

## UNLOADERS (Pneumatic)

Fuller Co., Catasaqua, Penna.  
Gardner-Denver Co., Quincy, Ill.

## V-BELTING (See Belting, V-Type)

## VALVES (Bin)

Earle C. Bacon, Inc., New York, N. Y.  
Beaumont Birch Co., Philadelphia, Penna.  
Butler Bin Co., Waukesha, Wis.  
The Columbus Conveyor Co., Columbus, O.  
Conveyor Co., Inc., Los Angeles, Calif.  
Fuller Co., Catasaqua, Penna.  
Jeffrey Mfg. Co., Columbus, O.  
Link-Belt Co., Chicago, Ill.  
Stephens-Adamson Mfg. Co., Aurora, Ill.

## VALVES (Pulverized Material)

Beaumont Birch Co., Philadelphia, Penna.  
Butler Bin Co., Waukesha, Wis.  
Conveyor Co., Inc., Los Angeles, Calif.  
Fuller Co., Catasaqua, Penna.  
Link-Belt Co., Chicago, Ill.  
Mine & Smelter Supply Co., Denver, Colo.  
National Steel Prod. Co., Kansas City, Mo.  
C. M. Schaeffer Valve Co., Allentown, Penna.  
Whiting Corp., Harvey, Ill.

## VALVES (Slurry)

Merco Nordstrom Valve Co., Pittsburgh, Penna.  
Mine & Smelter Supply Co., Denver, Colo.  
C. M. Schaeffer Valve Co., Allentown, Penna.  
F. L. Smith & Co., New York, N. Y.

**VALVES (Water)**

Bristol Co., Waterbury, Conn.  
**Butler Bin Co., Waukesha, Wis.**  
 Dixon Valve & Coupling Co., Philadelphia, Penna.  
**Knox Mfg. Co., Philadelphia, Penna.**  
 Merco Nordstrom Valve Co., Pittsburgh, Penna.  
**Mine & Smelter Supply Co., Denver, Colo.**  
 Victor Balata & Textile Belting Co., Chicago, Ill.

**VENTILATING APPARATUS**

American Air Filter Co., Inc., Louisville, Ky.  
 American Blower Corp., Detroit, Mich.  
 American Foundry Equip. Co., Mishawaka, Ind.  
**Blaw-Knox Co., Blawnox, Penna.**  
 Sodemann Heat & Power Co., St. Louis, Mo.

**VIBRATING SCREENS (See Screens Vibrating)**

**VIBRATORS (Bin & Concrete Form Vibrators)**

Chicago Pneumatic Tool Co., New York, N. Y.  
**Jeffrey Mfg. Co., Columbus, O.**  
 Kirk & Blum Mfg. Co., Cincinnati, O.  
 Mall Tool Co., Chicago, Ill.  
 Marvel Equip. Mfg. Co., Chicago, Ill.  
 New Haven Vibrator Co., New Haven, Conn.  
 Roeth Vibrator Co., Chicago, Ill.  
 Separations Eng. Corp., New York, N. Y.  
**Stearns Mfg. Co., Inc., Adrian, Mich.**  
 Syntroon Co., Homer City, Penna.  
 W. S. Tyler Co., Cleveland, O.  
 White Mfg. Co., Elkhart, Ind.  
 Wodack Elec. Tool Corp., Chicago, Ill.

**VIBRATORS (Concrete Block)**

Besser Mfg. Co., Alpena, Mich.  
**Stearns Mfg. Co., Inc., Adrian, Mich.**

**WAGONS (Dump)**

Athey Truss Wheel Co., Chicago, Ill.  
**Blaw-Knox Co., Blawnox, Penna.**  
 Caterpillar Tractor Co., E. Peoria, Ill.  
 Euclid Road Mch. Co., Cleveland, O.  
 Heil Co., Milwaukee, Wis.  
**Kochring Co., Milwaukee, Wis.**  
 R. G. LeTourneau, Inc., Peoria, Ill.  
**Pressed Steel Car Co., Inc., Pittsburgh, Penna.**  
 A. Streich & Bros. Co., Oshkosh, Wis.

**WALL FORMS & MACHINES (Concrete)**

Besser Mfg. Co., Alpena, Mich.

**WASHERS (Sand, Gravel & Stone) (See Screens, Scrubbers)**

**WASTE HEAT RECOVERY SYSTEMS**

Louisville Drying Mch. Co., Inc., Louisville, Ky.

**WEIGHING EQUIPMENT**

Anchor Concrete Mch. Co., Columbus, O.  
 Atlas Car & Mfg. Co., Cleveland, O.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Beaumont Birch Co., Philadelphia, Penna.  
**Blaw-Knox Co., Blawnox, Penna.**  
 Builders-Providence, Inc., Providence, R. I.  
**Butler Bin Co., Waukesha, Wis.**  
 The Columbus Conveyor Co., Columbus, O.  
 Erie Steel Construction Co., Erie, Penna.  
 Fairbanks, Morse & Co., Chicago, Ill.  
 R. F. Gump Co., Chicago, Ill.  
 Howe Scale Co., Rutland, Vt.  
**Jeffrey Mfg. Co., Columbus, O.**  
 Johnson, C. S. Co., Champaign, Ill.  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 The Kron Co., Bridgeport, Conn.  
**Merrick Scale Mfg. Co., Passaic, N. J.**  
 Miles Mfg. Co., Jackson, Mich.  
**Mine & Smelter Supply Co., Denver, Colo.**  
 Richardson Scale Co., Clifton, N. J.  
 Schaffer Poidometer Co., Pittsburgh, Penna.  
**Stearns Mfg. Co., Inc., Adrian, Mich.**  
 Syntroon Co., Homer City, Penna.  
 Toledo Scale Co., Toledo, O.

**WELDING & CUTTING EQUIPMENT**

Allan Mfg. & Welding Co., Buffalo, N. Y.  
**Allis-Chalmers Mfg. Co., Milwaukee, Wis.**  
 Columbus Steel Co., San Francisco, Calif. (U. S. Steel Corp. Sub.)  
 Continental Motors Corp., Detroit, Mich.  
**General Elec. Co., Schenectady, N. Y.**  
 General Scientific Equip. Co., Philadelphia, Penna.  
**Harnischfeger Corp., Milwaukee, Wis.**  
 Hobart Bros. Co., Troy, O.  
 Lincoln Elec. Co., Cleveland, O.  
 Linde Air Prod. Co., New York, N. Y.  
 Metal & Thermit Corp., New York, N. Y.  
**Mine & Smelter Supply Co., Denver, Colo.**  
 Pulmonan Safety Equip. Corp., Brooklyn, N. Y.  
 Ransome Concrete Mch. Co., Dunellen, N. J.  
 S. Morgan Smith Co., York, Penna.  
 Torchweld Equip. Co., Chicago, Ill.  
 Weldit Acetylene Co., Detroit, Mich.  
**Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.**  
 Wilson Welder & Metals Co., Inc., New York, N. Y.

**WELDING RODS AND ELECTRODES**

American Chain & Cable Co., Inc., Bridgeport, Conn.  
 American Manganese Steel Div., Chicago Heights, Ill.  
**American Steel & Wire Co., Cleveland, O.**  
**Earle C. Bacon, Inc., New York, N. Y.**  
**Bethlehem Steel Co., Bethlehem, Penna.**  
 Const. Metals, Inc., Canton, O.  
 Columbus Steel Co., San Francisco, Calif. (U. S. Steel Corp. Sub.)  
**General Elec. Co., Schenectady, N. Y.**  
**Harnischfeger Corp., Milwaukee, Wis.**  
 Haynes Steelite Co., Kokomo, Ind.  
**Hazard Wire Rope Co., Wilkes-Barre, Penna.**  
 Hobart Bros. Co., Troy, O.  
 Jones & Laughlin Steel Corp., Muncy, Penna.  
 R. G. LeTourneau, Inc., Peoria, Ill.  
 Lincoln Elec. Co., Cleveland, O.  
 Linde Air Prod. Co., New York, N. Y.  
 Manganese Steel Forge Co., Philadelphia, Penna.  
 Metal & Thermit Corp., New York, N. Y.  
**Mine & Smelter Supply Co., Denver, Colo.**  
 National Bearing Metals Corp., St. Louis, Mo.  
 Weldit Acetylene Co., Detroit, Mich.  
**Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.**  
 Wilson Welder & Metals Co., Inc., New York, N. Y.

**WELL CURBING MACHINERY & MOLDS**

Besser Mfg. Co., Alpena, Mich.

**WHEELS (Car)**

American Manganese Steel Div., Chicago Heights, Ill.  
**Bethlehem Steel Co., Bethlehem, Penna.**  
 Carnegie-Illinois Steel Corp., Pittsburgh, Penna.  
 The Chase Foundry & Mfg. Co., Columbus, O.  
 Conveyor Co., Inc., Los Angeles, Calif.  
 Dobbie Foundry & Mach. Co., Niagara Falls, N. Y.  
**Eagle Iron Wks., Des Moines, Ia.**  
**Farrell-Cheek Steel Co., Sandusky, O.**  
**Frog, Switch & Mfg. Co., Carlisle, Penna.**  
 Kensington Steel Co., Chicago, Ill.  
**Mine & Smelter Supply Co., Denver, Colo.**  
 National Malleable & Steel Castings Co., Cleveland, O.  
 Oliver Mch. Co., Grand Rapids, Mich.  
 Rogers Iron Wks., Joplin, Mo.  
 Sanford-Day Iron Wks., Inc., Knoxville, Tenn.  
**Taylor-Wharton Iron & Steel Co., High Bridge, N. J.**  
 Watt Car & Wheel Co., Barnesville, O.  
 The Webb Corp., Webb City, Mo.

**WHEELS (Crane)**

American Manganese Steel Div., Chicago Heights, Ill.  
**Bethlehem Steel Co., Bethlehem, Penna.**  
 Carnegie-Illinois Steel Co., Pittsburgh, Penna.

Conveyor Co., Inc., Los Angeles, Calif.  
 Dobbie Foundry & Mach. Co., Niagara Falls, N. Y.  
**Farrell-Cheek Steel Co., Sandusky, O.**  
**Frog, Switch & Mfg. Co., Carlisle, Penna.**  
 Kensington Steel Co., Chicago, Ill.  
**Mine & Smelter Supply Co., Denver, Colo.**  
 National Steel Prod. Co., Kansas City, Mo.  
**Taylor-Wharton Iron & Steel Co., High Bridge, N. J.**  
 The Webb Corp., Webb City, Mo.

**WHEELS (Sprocket)**

American Manganese Steel Div., Chicago Heights, Ill.  
**Earle C. Bacon, Inc., New York, N. Y.**  
**Chain Belt Co., Milwaukee, Wis.**  
 Continental Gin Co., Birmingham, Ala.  
 Conveyors Co., Inc., Los Angeles, Calif.  
**Eagle Iron Wks., Des Moines, Ia.**  
**Farrell-Cheek Steel Co., Sandusky, O.**  
**Frog, Switch & Mfg. Co., Carlisle, Penna.**  
**Gruender Crusher & Pulverizer Co., St. Louis, Mo.**  
 Kensington Steel Co., Chicago, Ill.  
**Link-Belt Co., Chicago, Ill.**  
**Mine & Smelter Supply Co., Denver, Colo.**  
 Rogers Iron Wks., Joplin, Mo.  
**Stephens-Adamson Mfg. Co., Aurora, Ill.**  
**Taylor-Wharton Iron & Steel Co., High Bridge, N. J.**  
 Wisconsin Foundry & Mach. Co., Madison, Wis.

**WHEELS (Tracklaying Type)**

Athey Truss Wheel Co., Chicago, Ill.  
**Farrell-Cheek Steel Co., Sandusky, O.**  
 French & Hecht, Inc., Davenport, Ia.  
**Frog, Switch & Mfg. Co., Carlisle, Penna.**

**WINCHES (See also Capstans)**

Alloy & Steel & Metals Co., Los Angeles, Calif.  
 C. O. Bartlett & Snow Co., Cleveland, O.  
 Clyde Iron Wks., Inc., Duluth, Minn.  
 Continental Motors Corp., Detroit, Mich.  
 Duke Engine Co., Grand Haven, Mich.  
 Detroit Hoist & Mach. Co., Detroit, Mich.  
 Dobbie Foundry & Mach. Co., Niagara Falls, N. Y.  
 Fridy Hoist & Mch. Co., Mountville, Penna.  
 Godfrey Conveyors Co., Elkhart, Ind.  
 Heil Co., Milwaukee, Wis.  
**Jackson & Church Co., Saginaw, Mich.**  
**Link-Belt Co., Chicago, Ill.**  
 O. K. Clutch & Mch. Co., Columbus, Penna.  
**Robins Conveying Belt Co., Passaic, N. J.**  
**Stephens-Adamson Mfg. Co., Aurora, Ill.**  
 Sterling Mch. Corp., Kansas City, Mo.  
 Webster Mfg. Inc., Tiffin, O.  
 Willamette Hyster Co., Portland, Ore.

**WIRE CLOTH**

**Earle C. Bacon, Inc., New York, N. Y.**  
 Bodinson Mfg. Co., San Francisco, Calif.  
 Buffalo Wire Wks. Co., Buffalo, N. Y.  
**Cleveland Wire Cloth & Mfg. Co., Cleveland, O.**  
 R. F. Gump Co., Chicago, Ill.  
 Columbus Steel Co., San Francisco, Calif. (U. S. Steel Corp. Sub.)  
 N. Y.  
**Iowa Mfg. Co., Cedar Rapids, Ia.**  
**Jeffrey Mfg. Co., Columbus, O.**  
 Kennedy-Van Saun Mfg. & Eng. Corp., New York, N. Y.  
 Korb-Pettit Wire Fabrics & Iron Wks., Inc., Philadelphia, Penna.  
**Ludlow-Saylor Wire Co., St. Louis, Mo.**  
 The McNally-Pittsburg Mfg. Corp., Pittsburg, Kans.  
 Manganese Steel Forge Co., Philadelphia, Penna.  
 Michigan Wire Cloth Co., Detroit, Mich.  
**Mine & Smelter Supply Co., Denver, Colo.**  
 National Wire Cloth Co., St. Paul, Minn.  
 Newark Wire Cloth Co., Newark, N. J.

Oliver United Filters, Inc., New York, N. Y.  
**Pioneer Eng. Wks., Inc., Minneapolis, Minn.**  
**Robins Conveying Belt Co., Passaic, N. J.**  
**John A. Roebling's Son Co., Trenton, N. J.**  
**Simplicity Eng. Co., Durand, Mich.**  
 Twin City Iron & Wire Co., St. Paul, Minn.  
**W. S. Tyler Co., Cleveland, O.**  
**Wickwire Spencer Steel Co., New York, N. Y.**

**WIRE (Copper, Iron & Steel)**

American Brass Co., Waterbury, Conn.  
**American Steel & Wire Co., Cleveland, O.**  
 Anaconda Wire & Cable Co., New York, N. Y.  
**Bethlehem Steel Co., Bethlehem, Penna.**  
 Columbus Steel Co., San Francisco, Calif. (U. S. Steel Corp. Sub.)  
**Mine & Smelter Supply Co., Denver, Colo.**  
**John A. Roebling's Son Co., Trenton, N. J.**  
 Simplex Wire & Cable Co., Cambridge, Mass.  
 United States Rubber Co., New York, N. Y.  
**Westinghouse Elec. & Mfg. Co., E. Pittsburgh, Penna.**  
**Wickwire Spencer Steel Co., New York, N. Y.**

**WIRE ROPE**

American Chain & Cable Co., Inc., Bridgeport, Conn.  
**American Steel & Wire Co., Cleveland, O.**  
**Earle C. Bacon, Inc., New York, N. Y.**  
**Bethlehem Steel Co., Bethlehem, Penna.**  
 Columbus Steel Co., San Francisco, Calif. (U. S. Steel Corp. Sub.)  
**Hazard Wire Rope Co., Wilkes-Barre, Penna.**  
 Interstate Equip. Corp., Elizabeth, N. J.  
 Jones & Laughlin Steel Corp., Gilmore Wire Rope Div., Muncy, Penna.  
**A. Leschen & Sons Rope Co., St. Louis, Mo.**  
 R. G. LeTourneau, Inc., Peoria, Ill.  
**MacWhitely Co., Kenosha, Wis.**  
 Meckum Eng. Co., Inc., Chicago, Ill.  
**Mine & Smelter Supply Co., Denver, Colo.**  
**John A. Roebling's Sons Co., Trenton, N. J.**  
 Union Wire Rope Corp., Kansas City, Mo.  
**Wickwire Spencer Steel Co., New York, N. Y.**

**WIRE ROPE FITTINGS**

American Chain & Cable Co., Inc., Bridgeport, Conn.  
 American Hoist & Derrick Co., St. Paul, Minn.  
**American Steel & Wire Co., Cleveland, O.**  
**Earle C. Bacon, Inc., New York, N. Y.**  
**Bethlehem Steel Co., Bethlehem, Penna.**  
 Chicago Steel Foundry Co., Chicago, Ill.  
 Columbus Steel Co., San Francisco, Calif. (U. S. Steel Corp. Sub.)  
 Electroline Co., Chicago, Ill.  
**Hazard Wire Rope Co., Wilkes-Barre, Penna.**  
 Interstate Equip. Corp., Elizabeth, N. J.  
 Jones & Laughlin Steel Corp., Gilmore Wire Rope Div., Muncy, Penna.  
 Thomas Laughlin Co., Portland, Maine.  
**A. Leschen & Sons Rope Co., St. Louis, Mo.**  
 Meckum Eng. Co., Inc., Chicago, Ill.  
**John A. Roebling's Sons Co., Trenton, N. J.**  
 Union Wire Rope Corp., Kansas City, Mo.  
**Wickwire Spencer Steel Co., New York, N. Y.**

**WIRE ROPE SLINGS**

American Chain & Cable Co., Inc., Bridgeport, Conn.  
**American Steel & Wire Co., Cleveland, O.**  
 Broderick & Hascom Rope Co., St. Louis, Mo.  
 Columbus Steel Co., San Francisco, Calif. (U. S. Steel Corp. Sub.)  
**Hazard Wire Rope Co., Wilkes-Barre, Penna.**  
 Jones & Laughlin Steel Corp., Gilmore Wire Rope Div., Muncy, Penna.  
**MacWhitely Co., Kenosha, Wis.**

**WIRE (Welding) (See Welding Rods, Electrodes)**



## WILLIAMS *Buckets* ARE BITING INTO FROZEN GROUND and TROPIC MUCK

• Williams Buckets are very much in active service in the wide-flung war offense. Concrete-hard, frozen ground is being broken by the sharp teeth of Williams Buckets in far north road building. Deep in jungles Wellman Buckets are digging and dredging. At ore mines, over stock piles and railway cars, and in steel mills Williams Buckets are literally moving mountains to help beat the Axis.

*built by*  
**THE WELLMAN  
ENGINEERING COMPANY**

7023 Central Avenue • Cleveland, Ohio

## B&W PULVERIZERS

FOR  
DIRECT FIRING KILNS  
AND FURNACES

FOR RAW MATERIAL, CLINKER  
AND MISCELLANEOUS MATERIALS

THE BABCOCK & WILCOX COMPANY  
85 LIBERTY STREET NEW YORK, N. Y.



PIONEER offers a complete line of **STANDARDIZED UNITS** for the producer who wants to increase capacity — modernize his equipment — or build a new plant designed to answer his problem.



# PIONEER

PIONEER ENGINEERING WORKS • MINNEAPOLIS, MINN.

## "BRANFORD" PNEUMATIC VIBRATORS



If you are interested in increasing the efficiency of your material handling equipment, we suggest you write us for data on our Vibrators for use on Hoppers, Bins, Chutes, Concrete Buckets, Screening Devices or in any place where bridging over or hanging up of material occurs.

Prevents costly damage to equipment by slogging; cuts down labor costs and increases production.

We also manufacture *Vibrators* for placing concrete—Pipe Forms, Tanks, slabs, joists, etc.

**NEW HAVEN VIBRATOR CO.**  
145 CHESTNUT ST. NEW HAVEN, CONN.

...made to meet the needs of Rock Products Operators,  
**MONARCH Whyte Strand**  
**PREformed WIRE ROPE**  
...the **CORRECT Rope** for your equipment

- PREformed
- Internally Lubricated
- Made from selected steels
- Made by craftsmen with years of experience

**MACWHYTE COMPANY**  
2949 Fourteenth Ave., Kenosha, Wis.  
MILL DEPOTS: New York, Pittsburgh, Chicago  
Ft. Worth, Portland, Seattle, San Francisco  
Distributors throughout the U. S. A.

## OBITUARIES

**STANLEY R. DURLAND**, president, S. R. Durland Sand Co., West Wyoming, Penn., died recently at the age of 62. Born in West Wyoming on May 6, 1880, Mr. Durland had been widely known for many years in construction circles of Wyoming Valley.

**FRANK J. WESCHLER**, vice-president Chain Belt Co., Milwaukee, Wis., and general manager of Baldwin-Duckworth, a division of Chain Belt Co., Springfield and Worcester, Mass., died suddenly in Worcester. Mr. Weschler became affiliated with the Baldwin Chain and Manufacturing Co. of Worcester, Mass., in 1927, as president and treasurer. Upon the merger of that company with the Duckworth Chain and Manufacturing Co. in 1930, he became treasurer and general manager of the newly-formed Baldwin - Duckworth Chain Corp. When Baldwin - Duckworth merged with the Chain Belt Co. in 1939, Mr. Weschler became vice-president of the Chain Belt Co., and general manager of Baldwin-Duckworth, which is now a division of the Chain Belt Co.

**HARRISON ESTELL HOWE**, for 21 years editor of *Industrial and Engineering Chemistry*, died recently at his home in Washington, D. C., at the age of 61. He was born in Georgetown, Ky., in 1881. During World War I he was consultant to the Nitrate Division of the Ordnance Bureau, U. S. Army. In 1919 he became chairman of the Division of Research Extension of the National Research Council, which position he left to become editor of *Industrial and Engineering Chemistry* in 1921. This position he held at the time of his death, and also that of editor of *Chemical and Engineering News*.

**MODEL 51**  
**TRADE MARK**  
**KEYSTONE**  
REGISTERED U. S. PATENT OFFICE

### BLAST HOLE DRILL

**CRAWLER MOUNTED AND STABLE IN TRACTION—Short moves can be made with derrick standing.**

The outstanding feature of this modern rock drill is its welded and riveted sturdy frame. Pounding down six inch holes in hard rock, gives a rock drill a lot of jolts—and that is why **KEYSTONE** engineers employed a combination of both welding and riveting to give it a rugged and durable frame foundation.

The working mechanism of the Model 51 crawler traction drill is likewise made to take rough service. Shafts and anti-friction bearings are oversized. The length and character of the stroke are adjustable to give greatest efficiency.

You can be sure of getting a superior piece of equipment that will give you dependable performance for years if you select a **KEYSTONE** Blast Hole Drill.

You will want to know more about it.

Write for Bulletin BD-1141.

**KEYSTONE DRILLER CO.**  
Beaver Falls, Penna.

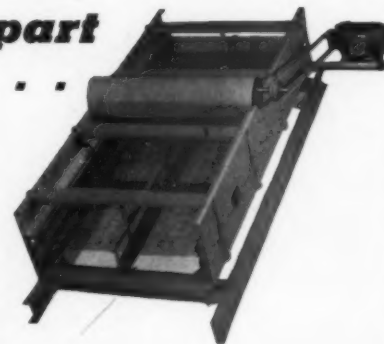


## Universals do their part for Victory . . . . .

The present emergency makes it doubly important for utmost efficiency in your plant—**UNIVERSAL SCREENS** will assure you of getting just that in meeting exact screening specifications.

Write for New Catalog No. 107 on Screens and Screening

**UNIVERSAL VIBRATING SCREEN CO.**  
RACINE - - WISCONSIN



WILLIAM NEELY, who established the Columbia Concrete Co., Kelso, Wash., passed away recently at the age of 65 after a long illness. Mr. Neely was a native of Markdale, Ontario, Canada, and came to Kelso 18 years ago from Montana.

A. E. FIELDING, president of the Screen Equipment Co., Buffalo, N. Y., passed away December 8, after a two weeks' illness. Mr. Fielding was widely known throughout the rock products industry.

JOHN TIMOTHY HEFFERNAN, JR., executive vice-president and general manager of the Glacier Gravel Co., Seattle, Wash., died recently at the age of 43, after a brief illness. He was born in Port Townsend August 4, 1899. During World War I he served in the United States coast artillery. Mr. Heffernan's father is the retired president of the Heffernan Dry Dock Co., which he founded in Port Townsend and moved to Seattle 43 years ago.

CHARLES V. SWEENEY, owner of the Edgerton Sand and Gravel Co., Edgerton, Wis., passed away recently at the age of 45. Mr. Sweeney was also associated in the tobacco business with his brother, J. Edward Sweeney.

FRANK W. WAIT, one of the organizers and first members of the board of directors of the Glens Falls Portland Cement Co., Glens Falls, N. Y., passed away recently. He also served as secretary of the company, and had been associated with the late Thomas S. Coolidge in the Jointa Lime Co. and later formed the F. W. Wait Lime Co. of which he was president until his retirement in 1916.

**PULVERIZERS** for the reduction of Cement Materials, Limestone, **Agricultural Limestone**, Fire Clay and All Dry, Refractory Materials.

Capacities: 1 to 60 tons per hour

Finenesses: 20 to 350 mesh

**BRADLEY PULVERIZER CO.**

ALLENTOWN, PENNA.

To Increase Capacities or Fineness of Present Grinding Plant—  
To Reduce Power and Maintenance Costs—  
To Insure an Absolutely Uniform Product—

**Use the BRADLEY AIR SEPARATOR**

**MANGANESE STEEL**  
CASTINGS

for  
PULVERIZERS  
CRUSHERS  
ROLLS  
SCREENS



for  
SHOVELS  
DREDGES  
CRANES  
CONVEYORS

**The Frog, Switch & Mfg. Co.**

Established 1881

CARLISLE, PA.

*Don't Scrap it - WELD IT*

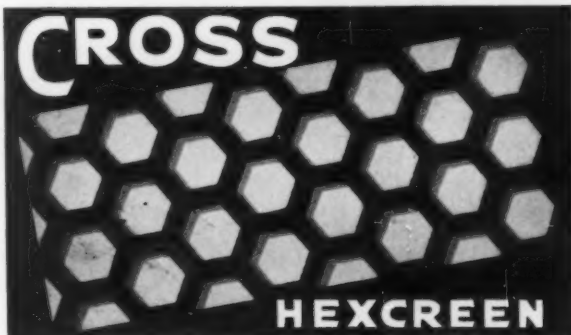
It's patriotic, as well as good business, to repair parts instead of scrapping them. By salvaging tractor parts, buckets, dipper teeth, frogs, crossings—roll, gyratory, jaw crushers, you take one more load off plants doing war work.

Repair your broken and worn parts with Manganal—it's the easy, quick and efficient way. Manganal alloy steel welding, wedge bars and shapes give new lives to old parts.

**STULZ-SICKLES CO.**  
NEWARK, N. J.



**CROSS**



**HEXSCREEN**

**CROSS ENGINEERING COMPANY**

Manufacturing Plant and Offices, CARBONDALE, PENNSYLVANIA

**CROSS Screens for Vibrating, Revolving and Shaking Equipment . . .**

WILL **INCREASE** PRODUCTION  
and **SAVE** MANPOWER and  
CRITICAL MATERIALS

Cross **SERVICE AGENCIES**  
located in all principal cities



## MOVE MORE TONS PER \$



Simple type of Sauerman Scraper System handles large stockpile of crushed rock at cement mill.

WHEREVER there is a problem of excavating from pit or bank, stockpiling or other work involving haulage for any distance from 100 to 1500 ft.—It pays to find out what a Sauerman Slackline or Drag Scraper will do and what it will cost. Time and again a Sauerman machine shows a saving in comparison with any equipment that will dig and haul an equal yardage under given conditions. Write for catalog.

SAUERMAN BROS., INC.  
530 S. Clinton St., Chicago

**SAUERMAN**  
LONG RANGE MACHINES

## LOWEST COST PER YARD

writes the specification of a HAISS LOADER for the man who plans for the future as well as the present.



2-3-5 and 8 YARD CAPACITIES.  
Write for catalogs



GEO. HAISS MFG. CO., INC.  
**HAISS**

Park Avenue & 143rd Street, New York, N. Y.

## Sand-Lime Brick Production and Shipments

Six active sand-lime block and brick plants reported for November and five for October, statistics for which were published in December.

### AVERAGE PRICE FOR NOVEMBER

	Plant Price	Delivered Price
Detroit, Mich. ....	.....	\$16.00
Sebewaing, Mich. ....	.....	.....
Saginaw, Mich. ....	\$13.00	.....
Grand Rapids, Mich. ....	.....	15.00
Seattle, Wash. ....	16.50	18.50
St. Louis, Mo. ....	.....	.....

### STATISTICS FOR OCTOBER AND NOVEMBER

	October	November
Production .....	1,551,000	1,415,000
Shipments (rail) ...	230,000	.....
Shipments (truck) ..	1,449,503	1,016,230
Stock on Hand .....	375,825	882,994
Unfilled Orders .....	575,000	395,000

\* Five plants reporting: incomplete, two not reporting unfilled orders.

\*\* Six plants reporting: incomplete, one not reporting stock on hand and two not reporting unfilled orders.

## Outlook for Sand-Lime Brick

COMMENTING on business conditions and the outlook of the sand-lime brick industry for 1943, J. Morley Zander says the industry is working to win the war and is producing for that one end. Where there is war building activity the brick factories are very busy, and brick and blocks are going to air fields, factories, hospitals, camps, and defense housing. In some instances special use has been found for standard products.

For several years the tendency in the industry has been towards larger units, and many of the brick plants have added equipment for the purpose of making natural or lightweight aggregate blocks and tile. The sand-lime brick factory with its batteries of high pressure curing equipment is well suited to the purpose of making fully cured concrete products, and many are doing so. These blocks and tile are favorites in defense housing projects. The resultant sales in these war times have helped considerably and many of the factories are busy delivering these units. After the war this good will created by the quality of these units will be of value.

## Ryerson Anniversary Brochure

JOSEPH T. RYERSON & SON, INC., Chicago, Ill., in celebrating its 100th birthday has commemorated the occasion by publishing a beautiful brochure entitled, "100 Years of Peace and War." Ben Stahl, illustrator for *Saturday Evening Post*, handled the principal drawings which dramatize the events in the history of the Ryerson company and the nation. Pen and ink sketches were drawn by Joseph Feher.

## TALCOTT BELT FASTENERS

for Splicing and Patching Conveyor Elevator and Transmission Belts



Only a Hammer Needed to Apply Talcott Fasteners

Write for Information  
Our representative will be on hand to see you at both conventions

W. O. & M. W. Talcott, Inc.  
92 Sabin St.  
PROVIDENCE, R. I.

Make Your Screening Surfaces More Effective with

## HARRINGTON & KING PERFORATED METAL SCREENS

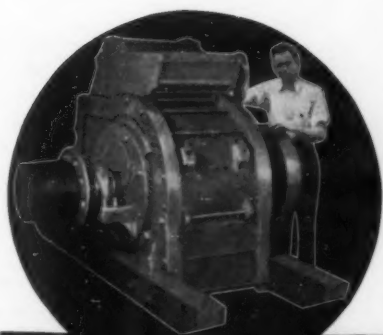
Their perforations are properly spaced to give greatest capacity without loss of strength and durability. Any size, any shape, any metal, any perforation.

Write for illustrated catalog.

**Harrington & King**  
PERFORATING CO.

3650 Fillmore St., Chicago—114 Liberty St., N. Y.

ROCK PRODUCTS



**You can do  
more in a  
"DAY"  
Swing Hammer  
PULVERIZER**

Its wide crushing range makes it serve the purpose of two or more other types of crushers. Roller bearing equipped. Write for Bulletin.

**Brooks** EQUIPMENT & MFG. CO.  
KNOXVILLE, TENNESSEE

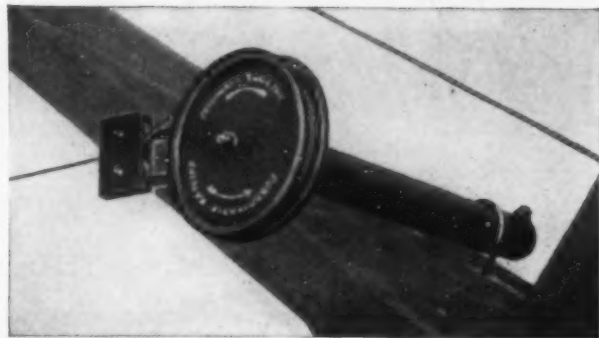
**PERFORATED METAL  
SAND AND GRAVEL SCREENS**  
*Manufactured exactly to your specifications*  
Any size or style screen, in thickness of steel wanted with any size perforation desired.  
We can promptly duplicate your present screens at lowest prices

**CHICAGO PERFORATING CO.**  
2437 West 24th Place  
CHICAGO, ILLINOIS  
Canal 1459

**SUPER-LOY**  
WOVEN WIRE SCREENS

**LUDLOW-SAYLOR**  
WIRE CO. ST. LOUIS

**RUD-o-MATIC TAGLINE**



**RYERSON  
CERTIFIED  
STEELS**

**10 Strategically-Located Steel-Service Plants**

Principal products include—Alloy Steels, Tool Steels, Stainless Steel, Hot Rolled Bars, Hoops and Bands, Beams and Heavy Structural, Channels, Angles, Tees and Zees, Plates, Sheets, Cold Finished Shafting and Screw Stock, Strip Steel, Flat Wire, Boiler Tubes, Mechanical Tubing, Rivets, Bolts, etc. Write for Stock List. Joseph T. Ryerson & Son, Inc. Plants at Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

**YOU CAN ELIMINATE 50% OR MORE  
OF YOUR TRUCKS, TIRES AND MEN—**



—if you're loading material by hand. Read our full-page ad Rock Products December issue. Then write for complete details at once.

**You Need a DEMPSTER-DUMPSTER**  
DEMPSTER BROTHERS, Inc., Knoxville, Tenn.

**HAYWARD  
BUCKETS**

**USE RIGHT BUCKET  
FOR THE JOB**  
Hayward makes all four—clam shell, dragline, electric motor, orange peel.  
A Hayward recommendation is unprejudiced.

**THE HAYWARD COMPANY**  
202-204 Fulton Street  
New York, N. Y.

**A FOOL-PROOF TAGLINE**

The Rud-o-Matic Tagline is operated on a spring principle and maintains at all times a positive tension sufficient to steady a clam shell bucket under any and all conditions, and will operate perfectly with the boom at any angle. It eliminates all the grief usually encountered with the average tagline as there are no weights, tracks, pins, carriages, or sheaves to wear out or to get out of order. Because of the large bearing and fewer sheaves, the saving on cable alone would eventually pay for it.

Tagline is complete with fair lead and cable attached and can be installed in less than one-half hour. Most of the crane manufacturers have adopted the Rud-o-Matic as standard equipment.

Manufactured by  
**McCaffrey-Ruddock Tagline Corp.**  
2121 E. 25th St., Los Angeles

## Manufacturers' News

Independent Pneumatic Tool Co., Chicago, Ill., announces that the Boston, Mass., office, now managed by Vance G. Turner, has moved to 78 Brookline Ave., and the Birmingham, Ala., office has moved to 1411 North Third Ave.

Sauerman Bros., Inc., Chicago, Ill., has announced the appointment of J. R. Norton, 11 W. 42nd St., New York, N. Y., as distributor of their equipment, to succeed W. R. Elden who died recently.

Nordberg Manufacturing Co., Milwaukee, Wis., announces that T. D. Davis, service engineer for the crusher division, on the West Coast, has been made district representative for the Pacific Coast territory. The Los Angeles address has

been changed to 667 Subway Terminal Building.

Cleveland Rock Drill Co. and the Cleveland Pneumatic Tool Co., Cleveland, Ohio, has announced that Robert Craig, until recently district manager for the company at Salt Lake City, Utah, has been designated to make a trip through South and Central America, contacting distributors and generally looking after the interests of these affiliated concerns. Mr. Craig has been stationed twice previously in Western South America. He expects to make his first stop at San Juan, Puerto Rico, about Mid-November, proceeding then to Port of Spain, Trinidad. He will also visit Santiago, Chile; La Paz, Bolivia; Guayaquil, Ecuador; and Medellin, Colombia, then calling at Panama City and Colon.

The B. F. Goodrich Co., Akron, Ohio, announces that Earl B. Busenberg, chief

chemist of the Philadelphia Rubber Co., reclaim division, has been loaned to the Government to serve on the staff of technical consultants assisting William M. Jeffers, U. S. rubber director.

Westinghouse Electric and Manufacturing Co., Pittsburgh, Penn., has appointed Russel L. Whitney as sales manager of the company's transformer division in Sharon, Penn., according to an announcement by H. V. Putnam, vice-president and manager of the division. A. C. Farmer, formerly assistant sales manager, has been named assistant to the vice-president, and A. P. Bender, former sales manager, has been made assistant sales manager "to afford the best possible opportunity for his complete recovery" from an extended illness.

General Electric Co., Schenectady, N. Y., has appointed D. L. Beeman as engineer of the industrial power section of the industrial engineering department, to succeed E. G. Merrick. E. S. Sage has been named engineer of the mining section of the department to succeed P. L. Stone. Both Mr. Merrick and Mr. Stone will remain on full time in the section which each has heretofore administered, with special duties assigned and as engineering consultants. J. L. Townsend has been named assistant manager of sales, fractional-horsepower motor section of the motor division, and will make his headquarters in Fort Wayne, Ind.

Hertzler & Zook Co., Belleville, Penn., announces that Paul J. Newton, formerly Chief, Excavating and Grading Section, Construction Machinery Branch, War Production Board, Washington, D. C., has been elected treasurer of the company, succeeding I. Z. Hertzler, who has been named chairman of the board. John W. Lequea is office manager and B. C. Lantz is superintendent. Other officers and directors who also are officials of the New Holland Machine Co., New Holland, Penn., with which firm Hertzler & Zook Co. is affiliated, are I. A. Daffin, president; R. D. Buckwalter, vice-president and E. Z. Delp, Secretary. G. C. Delp and A. B. Morgan of the New Holland organization also are directors of Hertzler and Zook Co.

## ATTENTION . . . EQUIPMENT BUYERS



WE ARE PROUD OF THE FACT THAT VITAL EQUIPMENT — SO NECESSARY IN THE WAR PRODUCTION EFFORT — HAS BEEN PROCURED BY AND THROUGH OUR ORGANIZATION FOR MANY OF AMERICA'S LEADING INDUSTRIAL FIRMS.



## New and Rebuilt Equipment

KILNS • COOLERS • DRYERS

CRUSHERS • TUBE MILLS

CRANES, ETC.

MOTORS • GENERATORS AND

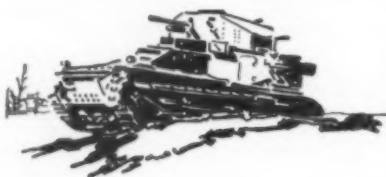
ELECTRICAL EQUIPMENT

*Inquiries invited. Consult us regarding your equipment problems. For prompt action, wire or phone.*

## WEBBER EQUIPMENT CO.

17 East 45th Street, New York

Phone  
Murray Hill  
2-3258



Always in the  
market for New  
or Used equipment

## New Incorporations

Moark Stone Co., Inc., Little Rock, Ark., has been organized to produce crushed stone. Paid-in capital \$50,000. Incorporators are Harry L. Roberts and Frank Kull of East St. Louis, Ill., and Cpl. Herbert R. Shock of Long Beach, Calif. Viceroy W. Snyder of Omaha, Boone county, Ark., was named resident agent.

St. Johns' River Gravel Co., with principal offices in Dover, Del., Howard E. Lynch, Jr., has been organized with a capital of \$25,000. Incorporators are Louise M. Pearson, Ethel W. Cohee, and Virginia L. Burger, all of Dover.

Clearwater Gravel Co., Duluth, Minn., has received incorporation papers for a washed sand and gravel plant in Wisconsin, with an authorized capital stock of \$50,000 of common stock, capital stock paid in \$15,000.

American Minerals, Inc., with principal offices in Spruce Pine, N. C., has been incorporated with an authorized capital stock of \$100,000. Subscribed stock \$300. Incorporators are F. C. Clark, P. H. Fortner, and Paul Henline, all of Spruce Pine.

Duke Mining Co., with principal office in Spruce Pine, N. C., has received certificate of incorporation to engage in a general mining business. Authorized capital stock \$10,000, subscribed stock \$800. Incorporators are Sam English, P. H. Fortner, and L. D. Fortner, all of Spruce Pine.

Sulphur Silica Co., Inc., Oklahoma City, Okla., has been organized with a capital of \$100,000. Incorporators are John J. Coates, C. E. Van Cleef, of Oklahoma City, and Jean J. Seipel, of Sulphur, Okla.

## New Owners

HOWARD S. WRIGHT & Co., has purchased the American Tugboat Co., Everett, Wash., which gave it control of the Everett Sand and Gravel Co., one of its subsidiaries. George J. Schuchart, Jr., and Howard H. Wright are the principal owners of the Howard S. Wright Co., one of the Pacific Northwest's largest construction firms.

## Plant Equipment Sold

WISCONSIN LANNON STONE CO., Menomonee Falls, Wis., has purchased the crushing and grinding plant of H. A. Klatt, Berlin, Wis. The purchaser, a producer of dimension stone, will use the machinery for making agricultural limestone of waste pieces.

## Buy Gravel Concern

J. K. DAVIDSON & BROTHER, Pittsburgh, Penn., has purchased the Pittsburgh Gravel Co. The deal involved one tug boat, a derrick-barge, and a number of steel barges.

## Buys Dolomite Quarry Land

ABOUT 350 acres of land in Stevens County, Wash., have been acquired by the federal government as the site

of a proposed quarry to supply raw materials for a magnesium reduction plant.

## Gravel Plant Fire

BATTLE CREEK GRAVEL CO., Battle Creek, Mich., had a fire loss estimated at \$8000 at its No. 2 plant three miles north of the city. Sparks from an electric welder are reported to have ignited an overflow of gasoline, the flames from which spread to a repair shed, a new electric plant, one truck, and welding equipment.

## Add Crusher

WARD & MONTGOMERY CO., Lebanon, Ky., one of the large crushed stone producers in central Kentucky, recently installed a new Pioneer 1536 crusher. This additional capacity will help materially in meeting future heavy demands.

## Little for Creditors

CHEMICAL LIME CO., Bellefonte, Penn., which went into bankruptcy following an expansion program under an R. F. C. loan, ended up with \$46,000 in available assets, of which the lawyers claim 75 percent for themselves as fees. The R. F. C. pro-

tested itself, at least in some degree, by making a deal with National Gypsum Co. to take over the plant.

## Ground Rock Phosphate Prospects

THE RAISE of 50c per ton in price for ground rock phosphate effective July 1, by one concern in Tennessee was disallowed by O.P.A. notwithstanding it had been announced in February, before any price ceilings were established.

There is some question as to what the A.A.A. will do in Illinois or in some of the other states of same region for 1943. While the A.A.A. in all other states refused to allow grants of aid for farmers to buy rock phosphate, and in only 16 states allow even benefit payments for its use, the Illinois committee started in 1941 making grants of aid in 11 counties and succeeded in giving away about eight thousand tons of low grade coarsely ground material, and in 1942 this experiment has grown to nearly 15,000 tons of same material for first nine months and 6,000 more already provided to make about 21,000. The demand for 1943 is reported to run over 60,000 tons if it can be had.

# Classified Advertisements

POSITIONS WANTED — POSITIONS VACANT  
Set in six-point type. Minimum \$1.00 each insertion, payable in advance.

INFORMATION—Box numbers in care of our office. An advertising inch is measured vertically in one column. Three columns, 30 inches to the page.

CLASSIFIED—Displayed or undisplayed. Rate per column inch, \$5.00. Unless on contract basis, advertisements must be paid for in advance of insertion.

## TEAM UP FOR VICTORY with "CONSOLIDATED"

### 20" GYRATORY CRUSHER

#### USED ONE YEAR ON SLATE

1—30" Allis-Chalmers Superior McCully Gyratory Crusher, feed opening 20" wide, capacity 125 t.p.h. on 3" setting, 275 t.p.h. at 5 1/2". Shop No. 8311. With or without 125 H.P. 3/60/440 volt slip ring motor and controls.

### JAW CRUSHERS

1—22"x50" Champion, all steel frame. Also an assortment of smaller sizes.

### CRUSHING ROLLS

1—36" d.x16" Sturtevant Mill Co.  
2—40"x16" Colorado Iron Works.  
1—42"x16" Allis-Chalmers Anaconda type.  
1—30"x30" Jeffrey Single Roll Crusher.

### BUCKET ELEVATORS

27' c/c—14x7; 29' c/c—14x7; 40'—7x5; 42'—10x6; 44'—7x5 belt; 70'—16x8; 90'—16x8; 3—100'—7x5, belt; all of these steel encased.

### BELT CONVEYORS

5—12" Steel Frame in 15' sections, 4" cross channels, 6" long channels. Link-Belt troughing and return idlers, with anti-friction bearings; 50', 85', 100', 125', 150' centers.  
1—24"x106' with wood frame.  
1—30"x122' c/c with wood frame, anti-friction idlers.  
3—15" Sandvik flat belt Conveyors, motor driven, with steel framework;  
2—60' c/c; 1—80' c/c.

### PAN CONVEYOR

1—24"x65' c/c Jeffrey Steel Pan Conveyor.



**CONSOLIDATED PRODUCTS COMPANY, INC.**

15-16-17 PARK ROW

NEW YORK, N. Y.

Shops and Yard at Newark, N. J., cover eight acres.

### ROTARY DRYERS, Direct Heat

3'x20', 5x20', 5x30', 6x24', 6x50'.

### ROTARY KILNS

4x30', 4x40', 8x80', 10x175'.

### CENTRIFUGAL AIR SEPARATORS

1—10' dia. Sturtevant Mill Co.  
2—14' dia. Gayco.

### TUBE MILLS

2—7'x24' Smidth Iron lined.

### RAYMOND PULVERIZERS

2—5 roll high and low side, also No's. 0000, 1, 3.  
5—Raymond Imp Pulverizers, also used for coal pulverizers; No's. 50, 55, 90.

### VIBRATING SCREENS

1—4'x8' 2-deck, Allis-Chalmers, heavy duty.  
4—4'x5' No. 39 Tyler Hummers, 2-deck. Other makes and sizes.

## FOR SALE

MARION Mod. 88, combination steam shovel crane and dragline—1 1/2 yd. cap.  
UNIVERSAL—% swing crane, cat mounted, 24-ft. boom, % yd. capacity.  
CLAMSHELL BUCKETS—%, %, 1% and 2 yds. rehandling type.

P. A. HENAU  
2140 Book Bldg. Detroit, Mich.

## FOR SALE

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- 4—7 ton Plymouth type 2, Model D L 24" gauge locomotives power gasoline engines.
- 3—7 ton Whitcomb type MO 24" gauge, power gasoline engines.
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- 1—3 1/2 ton Plymouth 24" gauge Model A L 105 gasoline power.
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- 1—No. 1 Brownhoist, Ser. No. 10271 with 35' boom.
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- 1—1/2 P & H 206.
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- 2—Allis Chalmers Mdl. K with Baker Bulldozers.
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- 4—La Plante Choate all steel 2 door bottom dump, wagons mtd. on 4 wheel trucks, capacity 19 tons.
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1 to 48 inch.....	3	1 to 48 inch.....	6
1 to 48 inch.....	4	1 to 48 inch.....	8
1 to 48 inch.....	5		

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Width	Ply	Width	Ply
6 to 48 inch.....	3	10 to 48 inch.....	6
8 to 48 inch.....	4	12 to 48 inch.....	8
10 to 48 inch.....	5		

### RUBBER COVERED CONVEYOR BELTING

Width	Ply	Top	Pulley
12	4	3/32	1/32
14	4	3/32	1/32
16	4	3/32	1/32
18	4	3/32	1/32
20	4	3/32	1/32
24	4	3/32	1/32
18	4	3/4	1/32
24	5	3/4	1/32
30	5	3/4	1/32

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200	18	1-15/16	4.25	60	18	2-7/16	6.00
80	20	1-15/16	5.00	40	18	2-7/16	6.50
20	22	1-15/16	5.45	70	20	2-7/16	7.00
50	24	1-15/16	5.85	400	22	2-7/16	8.00
8	27	1-15/16	7.50	500	24	2-7/16	8.50
40	18	2-3/16	5.00				
200	20	2-3/16	6.00				

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100	Hyatt	2-7/16	.....	7.50 ea.
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Size Shaft	1-3/16	1-7/16	1-11/16	1-15/16
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Ring Oiling	2.40	3.00	3.50	5.15

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1—4x3-A	....	3.00	1—3/4x2-C	.... 5.95
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1—4x1-AB	....	1.85	1—3/4x2-AB	.... 12.65
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1—4x2-AB	....	2.70	1—10x2-AB	.... 5.90
1—5x1-AB	....	1.95	1—10x2-AB	.... 6.70
1—5x3-AB	....	4.85	1—11x2-C	.... 12.50
1—5x5-AB	....	5.75	1—12x2-C	.... 12.15
1—5x3-AB	....	3.10	1—15x2-C	.... 16.25
1—5x5-AB	....	3.70	1—16x2-AB	.... 9.05
1—5x3-AB	....	3.80	1—19x2-D	.... 43.70
1—5x5-AB	....	2.30	1—19x1-D	.... 70.25
1—6x1-AB	....	2.35	2—19x2-C	.... 18.50
1—6x3-AB	....	3.50	1—20x2-AB	.... 17.00
1—6x5-AB	....	4.15	2—21x2-C	.... 20.75
1—6x7-AB	....	8.75	2—23x2-C	.... 32.50
1—6x5-AB	....	5.50	4—20x2-C	.... 34.75
1—7x1-AB	....	2.65	3—31x2-AB	.... 16.35
1—7x3-AB	....	6.35	3—31x2-AB	.... 23.75
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No.	Size	Price	No.	Size	Price
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3—8x3x1-7/16		9.60	3—16x3x1 1/4		12.00
1—10x3x1-11/16		10.65	1—20x3x1-15/16		30.00
2—10x3x1-7/16		12.00	10—18x3x1-15/16		19.00
1—11x3x2-7/16		13.50	3—24x3 1/2		
1—12x3x1-7/16		16.00	1—15/16		26.50
1—12x3x1 1/2		12.50			

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Width	Ply	Covers	Width	Ply	Covers	"B"—WIDTH—"	"C"—WIDTH—"	"D"—WIDTH—"
48"	6	1/8"	18"	6	10"	6"	5"	5"
42"	5	1/8"	16"	6	10"	5"	5"	5"
36"	6	1/8"	14"	6	8"	5"	4"	4"
30"	6	1/8"	12"	6	8"	5"	4"	4"
30"	5	1/8"	12"	5	6"	4"	3"	4"
24"	5	1/8"						
24"	4	1/8"						
20"	5	1/8"						
20"	4	1/8"						
18"	4	1/8"						
16"	4	1/8"						
14"	4	1/16"						
12"	4	1/16"						

### ELEVATOR BELTING

#### HEAVY DUTY RUBBER COVERED

Width	Ply	Top	Covers
-------	-----	-----	--------

12"	6	1/16"	1/16"
14"	6	1/16"	1/16"
16"	6	1/16"	1/16"
18"	6	1/16"	1/16"

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1—American Hoist & Derrick 15 ton, standard gauge, gasoline powered, for sale or rent.

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1—American, 40 ton, 4 wheel, std. gauge, saddle tank, cylinders 14 x 22, 190 lbs. working pressure, ASME boiler. For sale or rent.  
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Schramm 4 cyl. 360' V belt to 60 h.p. A.C. motor.  
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1—spaced 80' center, 18" steel buckets, chain No. 840.  
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1—Continuous inclined, 20" low front steel buckets on belt, 40".  
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1—Continuous inclined, 18" steel buckets, 2 strand chain.  
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Steel and malleable buckets, 5" to 30".  
Selected gears, sprockets, elevator and driving chain.

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75 selected head and tail pulleys.  
200 drive pulleys and 8" wheels, 6" to 8".  
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24" x 40" belt conveyor on frame, 5 h.p. motor.

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3 Hammer vibrating screens, 3 x 5, 1 & 2 deck.  
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2 Telsmith No. 7 complete sand dewatering tanks.  
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8 ton Plymouth standard gauge locomotive.  
8 ton Whitcomb 36" gauge locomotive.  
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75 h.p. Fairbanks-Morse Diesel engine, YV, 300 rpm.  
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Crane or Dragline Fronts for Marion 37 and Bucyrus 50-B, One Each.

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Allis-Chalmers 18" Gates No. 8K gyratory crusher, manganese fitted, No. 5405, Tex-ropes; A-1. Brownhoist 20-ton locomotive crane, steam, 40' boom, ASME boiler, being 100% rebuilt. Milwaukee 8-ton 36" gauge gasoline locomotive. Milwaukee 7-ton 36" gauge gas locomotives (3). 4-steam 18-ton locomotives, 10"x16" cyls, 36" ga. 1000 HP hydro-electric plant, 60 ft. head, AC. Monaghan Walker dragline, elec., 3-yd., 70' bm. Bucyrus 80B high lift steam shovel, on cats. Bucyrus-Erie 1 1/4-yd. GA-2 gas-air shovel. H. Y. SMITH CO., 828 N. W'way, Milwaukee, Wis.

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2-4 Ton WESTINGHOUSE, 250 V., 36" Ga., Equipped with 902-C Motors, and complete with Motor Driven Cable Reels.

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P&H Model 300 Crane with 1/2 yd. Clamshell. Good operating cond. 35 ft. boom, \$2750. Telsmith Gyratory Crusher good cond. \$325. 6 x 6 Swaby Gravel Pump, no power, \$60. Parson Model 20 Backfiller, \$350. Good for small loading crane.

BURLINGTON QUARRIES CORP.  
Burlington, Wisconsin

1/4 Yd. Comb. Byers Shovel-Crane-Pullshovel.  
1 1/4 Yd. Northport Shovel Attachment.  
1 1/4 Yd. Bucyrus-Erie 41B Shovel Attachment.  
15 Yd., two compartment steel bin.  
Erie, 40' crane boom with front drum.  
1 1/2 Yd. 36" gauge dump car.  
3-12 ton 36" gauge Whitcomb gas locos.  
1/2 Yd. and 1 1/2 Yd. Clamshell Buckets.

J. T. WALSH  
Briarlane Bldg., Buffalo, N. Y.

110 HP Diesel engine and generator.  
1-36x60 Fairmount single roll crusher.  
Revolving screen screens.  
Large stock electric motors.  
10 air compressors.

Wm. C. Johnson & Sons Machinery Co.  
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### FOR SALE

One complete Portable Dredging outfit, consisting of one AMSCO eight inch counterflow pump on Steel Pontoon barge, driven by two caterpillar motors, hoisting rig and all necessary equipment ready to operate. One 45-ton shay locomotive. Two 150 HP electric motors complete with grids and oil switches. One Kennedy-Van Saun gyratory crusher. All excellent condition. Address Box A-92, care Rock Products, 309 W. Jackson Blvd., Chicago, Ill.

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## CRUSHERS

GYRATORY: 42" Gates K. 30" Superior McCully (Like new). 20" Superior McCully. Gates Nos. 12, 10, 8, 6, 5, 4, 3, 2, 1 (75 avail.) Telsmith Nos. 4, 5, 6, 8, 9 & 16. Also many Austins, Kennedys and Traylor's, many sizes. JAW TYPE: Traylor 60x84, 48x60, 42x48, 34x72. Superior 84x66 & 24x36. Buchanan 30x42. Farrel 60x42, 30x36, 24x36, 18x36, 12x24. Good Roads 1030. Acme 24x40. Misc. 7x12, 9x16, 8x20, 8x24, 12x24, 9x36, 15x36. REDUC. TYPE: Kennedy Nos. 25, 37 & 49. Telsmith 3-F & 40. Traylor 36" T2, 8", 10", 12". Super. McCully 6" & 10". Newhouse 5, 7 & 10". Symons Cone & Disc Ty. 2' to 4'. ROLLS: Allis-C. 12 1/2x12, 36x10, 40x15, 54x24 & 72x30. Fairmount 38x60 & Jeffrey 24x24 to 36x54 single roll. Cornish 36x14 & 42x16, Etc., Etc. HAMMERMILLS: Williams No. 1, 2, 3, 4, 8 & 9. Jeffrey 36x18 & 36x42. Day Nos. 20 & 40. Etc. MILLS: Kennedy Ball 4x6, 5x5 & 5x8. Marcy 8x6 & 10x9. Hardinge 6"x3", 8"x30" & 6"x9". Misc. Tube Mills 2' & 4' x 25". Sturtevant Ring Roll. Raymonds, Kents, Fuller-Lehigh, Etc., Etc. CRUSHING PLANTS: No. 65 Diamond No. 22 Pioneer 8x24, 1030 Good Roads, 9x40 Austin-Western, 9x36 C.R.

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Barges, Bins, Buckets, Rollers, Cableways, Cars, Compressors, Conveyors, Cranes, Dryer, Derricks, Draglines, Drag Scrapers, Dredges, Drills, Engines, Elevators, Excavators, Generators, Hoists, Kilns, Locomotives, Loaders, Motors, Pipe, Pumps, Rail, Scales, Screens, Slacklines, Shovels, Tanks, Trucks, Tractors, Etc., in many sizes, types and makes at low prices. (I have equipment at many points in the United States and Canada. What you need may be near your plant.)

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100-ton Heavy Steel Bin....	\$ 550.00
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Power Unit .....	350.00
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Single Deck Vibrating	
Screen .....	300.00
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Rockwell 4464

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1-Multiplex 4x8x16 Solid.  
2000 Pallets 4x8x16 and 8x8x16.  
10-Racks, 56 Block Cap. and Shepard Jack Lift Truck.  
1-7 Ft. Blythstone Mixer.  
1-Set of 10x16 New Holland Roll Crusher.  
1-1'8" Traylor T.Y. Reduction Crusher.  
1-4" De Laval Cent. Pump (15 H.P. Elect. Drive, Direct Connected).  
10-Motors, 3 Phase, 6 Cyl., 220 V.—3 H.P. to 25 H.P.  
1-36" Rotary Screen and Scrubber, 14' long.  
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P&H Model 700, Gas, 1 1/4 cu. yd. capacity, 50 ft. boom with fairlead and shovel attachment.

P&H Model 206, 1/2 yd. clamshell, 40 ft. boom.

Moore-speed 1 1/4-yd. Gas Engine, 50' boom fairlead & 1 1/4-yd. shovel attachment.

3-95C Bucyrus Shovels, 3 1/4 yd. dipper, steam on traction wheels, in rebuilt condition.

Monaghan Steam Dragline, 127 ft. boom, 3 yard bucket on skids and rollers.

Parts for Monaghan Steam Draglines.

Gyratory Crushers—

No. 4 K Gates

No. 4 D Gates

No. 5 K Gates

No. 6 McCully Suspension Type

Harding Conical Mill 48x60 with 75 H.P. motor drive.

Rod Mill 4 ft. x 8 ft. Allis Chalmers, 40 H.P. motor drive.

Usable Parts for Cranes and Shovels: P&H Model 700—shovel attachment.

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Bucyrus 2 1/2 yd.—shovel dipper. Marion 5 yd. shovel dipper.

Osgood 1 1/4 yd.—crane parts.

48" x 12 ft. Revolving screens.

45" x 10 ft. Revolving screens.

32" x 10 ft. Revolving screens.

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14-2 cu. yd. end dump—36" gauge.

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Material Service Corporation

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2-New Saint Paul 3 yd. Style 459 combination dump and flat beds with 7" cylinders. List \$495.82. Net Ea., \$380.00

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Butler 120 yd. 3 compt. bin with weigh batcher.  
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Allis Chal. Model L Tractor with 12' bulldozer.  
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Derrick Boat equipped with 20 ton Wiley Whirley, 100' dm., 12 x 12 Steam Hoist. Hull 33 x 114 x 10'.  
Butler 18 cu. ft. Asphalt Pug Mill.  
2-Steel Stiff-leg Derricks, 10 tons, 100' dm.  
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Allis-Chalmers cent. pump, electric, 3500 GPM.  
Worthington 8" cent. Bronze impeller, elec. port.  
Dredge Pump 18" PH. cent. 200 HP AC motor.  
Vertical Boiler, 50 HP, A.S.M.E. 125 lb. pressure.

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Gyratory crushers: K.V.B. 30, 37-8, 40; Telsmith 32, 34, 38; Traylor 3"; McCully 12", 8", 6".  
Jaw: 6x12, 8x14, 10x20, 14x24, 12x26, 13x30, 15x30, 16x32, 56x84.  
Complete Rock Crushing Sand & Gravel Plants.

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1 1/2 yd. Williams Clamshell, rehandling.  
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Erie 1/2 yd. Rehandling, clamshell.  
20-Battleship Buckets, 2 to 3 yds.

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Bucyrus Erie Model 1030 electric tunnel shovel.  
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Universal 7 1/2 ton Truck Crane, 60' boom, on Mack.  
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Brownhoist 5-7 1/2 ton Crane, gas.  
Universal 6 ton Truck Crane, 60' boom, 60' tires.  
Northwest Model 105 gas Crane, 60' boom.

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Vulcan 8 ton, std. gauge, gas.  
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Whitcomb 4 1/2 ton, std. gauge, gas.  
2-Vulcan 6 ton, gas, 36" gauge.

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RESEARCH SERVICE DEPARTMENT, Rock Products, 309 West Jackson Blvd., Chicago, Ill.

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|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------|
| ...Admixtures            | ...Cement Process        | ...Dredge Pumps          | ...Laboratory Apparatus  | ...Seal Rings           |
| ...Aerial Tramways       | ...Central Mixing Plants | ...Drills (Rock)         | ...Lift Trucks           | ...Septic Tank Molds    |
| ...Aggregates (Special)  | ...Chimney Block Mach.   | ...Drill Bits            | ...Lime (Hydrated)       | ...Sewer Pipe Machines  |
| ...Agitators             | ...& Molds               | ...Drill Sharpening      | ...Lime Handling Equip.  | ...Shovels (Power)      |
| ...Air Compressors       | ...Machines              | ...Dry Steel             | ...Lime Plants           | ...Silos (Storage)      |
| ...Air Filters           | ...Classifiers           | ...Drives (Gear Reduc-   | ...Lime Putty Plants     | ...Silo Stave Machines  |
| ...Air Separators        | ...Coal Pulverizing      | ...tion)                 | ...Loaders               | ...Slakers (Rotary)     |
| ...Ash Receptacle Molds  | ...Equipment             | ...Dryers                | ...Locomotives           | ...Slurry Mixers        |
| ...Asphalt Mixing        | ...Concentrators         | ...Dry Batch Conveyors   | ...Lubricants            | ...Slurry Pumps         |
| ...Plants                | ...Concrete Mixers       | ...Dust Collecting       | ...Manganese Steel Parts | ...Slurry Separators    |
| ...Batching Plants       | ...Concrete Paints &     | ...Systems               | ...Mills (Ball, Compart- | ...Slurry Thickeners    |
| ...Bags                  | ...Coatings              | ...Dust Precipitators    | ...ment, Emery, Ham-     | ...Soft Stone Eliminat- |
| ...Bagging Machines      | ...Concrete Waterproof-  | ...Dust Recovery Plants  | ...mer, Rod, Roll,       | ...ors                  |
| ...Balls (Grinding)      | ...ing & Dampproof-      | ...Dynamite              | ...Tube)                 | ...Speed Reducers       |
| ...Barges                | ...ing                   | ...Electric Motors       | ...Mortar Mixers         | ...Structural Steel     |
| ...Batchers (Weighing)   | ...Contractors (Cement   | ...Electrostatic         | ...Pallets (Steel, Wood) | ...Fabrication          |
| ...Bearings              | ...Mill)                 | ...Separators            | ...Fans, Grinding (Wet   | ...Tampers (Hand &      |
| ...Belt Repair Equipmt.  | ...Conveyors             | ...Elevators             | ...& Dry)                | ...Power)               |
| ...Belting (Conveyor &   | ...Conveyor Idlers and   | ...Engineering Service   | ...Perforated Metal      | ...Tanks (Storage)      |
| ...Elevator)             | ...Rolls                 | ...Consulting & De-      | ...Pipe (Dredge)         | ...Tires                |
| ...Bin Level Indicators  | ...Coolers               | ...signing)              | ...Pipe Molds and Ma-    | ...Tractors             |
| ...Bins (Storage)        | ...Corn Crib Block and   | ...Engines (Diesel,      | ...chines (Concrete)     | ...Transit Mixers       |
| ...Blasting Supplies     | ...Tile Machines         | ...Gasoline, Steam)      | ...Plaster Mixers        | ...Trucks (Agitator)    |
| ...Block Machines,       | ...Correcting Basins     | ...Feeders               | ...Pneumatic Hammers     | ...Trucks (Dump)        |
| ...Building              | ...Cranes (Crawler &     | ...Floor Tile Machines   | ...Portable Aggregate    | ...Trucks (Industrial)  |
| ...Boats                 | ...Locomotive)           | ...Flotation Equipment   | ...Plants                | ...Trucks (Mixer Body)  |
| ...Brick Machines &      | ...Crushers              | ...Garbage Receptacle    | ...Pulverizers           | ...Unloaders            |
| ...Molds                 | ...Crushing & Screening  | ...Molds (Concrete)      | ...Pumps (Pulverized     | ...Unloaders (Box Car)  |
| ...Buckets               | ...Plants (Portable)     | ...Garden Furniture      | ...Material)             | ...V-Belting            |
| ...Building Tile         | ...Culvert Pipe Mach. &  | ...Molds (Concrete)      | ...Railway Equipment     | ...Vibrators (Bin)      |
| ...Machines              | ...Molds                 | ...Generators & M-G      | ...Rectifiers            | ...Wagons (Dump)        |
| ...Bulk Cement           | ...Curing Equipment      | ...Sets                  | ...Refractories          | ...Wall Forms & Ma-     |
| ...Batching Plants       | ...Curb Forms            | ...Guns (Hydraulic)      | ...Refrashers (Screw)    | ...chines (Concrete)    |
| ...Bulk Cement           | ...Derricks              | ...Gutter Block Ma-      | ...Rock Wool Cupolas     | ...Washers (Sand,       |
| ...Storage Plants        | ...Equipment             | ...chines (Concrete)     | ...Roofing Tile Machines | ...Gravel & Stone)      |
| ...Bulldozers            | ...Diesel Engine (Sta-   | ...Hoists                | ...Sand Drags            | ...Welding & Cutting    |
| ...Rollers/pavers        | ...tionary & Auto-       | ...Hoppers               | ...Sand & Gravel Plants  | ...Equipmt.             |
| ...Burial Vault Forms    | ...tive)                 | ...Hose                  | ...Sand Lime Brick       | ...Well Curing Mach.    |
| ...Calclating Equipment  | ...Dippers & Teeth       | ...Hydrators (Lime)      | ...Machinery             | ...& Molds              |
| ...Calcium Chloride      | ...Disintegrators        | ...Induced Draft Fans    | ...Sand Settling Tanks   | ...Wire Cloth           |
| ...Carbon Dioxide Plants | ...Dragline Cableway     | ...Jolt & Slab Ma-       | ...Scales                | ...Wire (Copper, Iron & |
| ...Cars (Industrial)     | ...Excavators            | ...chines (Concrete)     | ...Scrapers (Power Drag) | ...Steel)               |
| ...Catch Basin Block     | ...Drain Tile Machines   | ...Kilns (Rotary, Shaft, | ...Screens (Revolving,   | ...Wire Rope            |
| ...Machines              | ...Dredges               | ...Vertical)             | ...Vibrating, Etc.)      | ...Wire Rope Fittings   |
| ...Cement Colors         |                          |                          |                          |                         |

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The following machines which we own are now being rebuilt in our shops for January to March deliveries, depending on particular machine.

- 1—Thew-Lorain Model 55, 1 yd. gas shovel.
- 1—General 1/2 yd. gas crane.
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- 2—Koehring 301, 3/4 yd. gas shovel and cranes.
- 1—P & H Model 150, 1/2 yd. gas shovel and pullshovel.
- 1—P & H Model 300, 1/2 yd. gas shovel, crane, dragline, pullshovel.
- 1—Barber-Greene Bucket Loader.

### CLAMSHELL BUCKETS

1/2 yd. to 1 1/2 yd.

### DRAGLINE BUCKETS

3/4 yd. to 1 1/2 yd.

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Two 8 ft. x 5 ft. single surface type 42 Hummer electric screens with V-50 vibrators, motor-generator set for 230 DC current. Practically new. Price and details upon application. Address Box A-86, care of ROCK PRODUCTS, 309 W. Jackson Blvd., Chicago, Ill.

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No. 1 1/4 Sturtevant Rotary Crusher; 18" Belt Conveyor; Steel Bucket Elevator; Two Deck Vibrating Screen; 15 Ton Steel Bin; No. 1 Sturtevant Ring Roll Mill; Complete with Motors and Steel Building.

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Gyratory, Jaw and Roll Crushers, various sizes and makes. Belt and Chain Bucket Elevators. No. 7 Williams pulverizer, used 1 month.  
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### FOR SALE OR RENT COMPLETE READY MIXED CONCRETE BATCHING PLANTS

2 identical Blaw-Knox Plants, each consisting of following items:

- 1—115 ton 3 compartment Aggregate Bin
- 1—3 yd. Aggregate Weighing Batcher
- 1—300 bbl. Bulk Cement Bin
- 1—3 yd. Cement Batcher
- 1—150 gal. Automatic Water Weighing Tank—110 volt
- 1—50 ton Cement Elevator, Hopper Bottom Car Screw, Flexible Connections—Electric Motor Drive

1 Blaw-Knox Plant, consisting of following items, but so connected to permit all charging to be done from one gathering hopper:

- 1—150 ton Aggregate Bin
- 1—4 yd. Aggregate Weighing Batcher
- 1—300 bbl. Bulk Cement Bin
- 1—3 yd. Cement Batcher
- 1—50 ton Cement Elevator, Hopper Bottom Car Screw, 12" Screw Feeder
- 1—Cement Chute and Confining Hopper

All above equipment purchased new in 1941 and 1942. Also available for sale—one 2-yd. Sauerman Dragline Scraper, Open Type.

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One Automatic Feeder attachment for No. 2 Allis-Chalmers Pulverator, Hammer Mill. Address Box A-84, care Rock Products, 309 W. Jackson Blvd., Chicago, Ill.

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Up to 5000 Acres of Tennessee  
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**BEST AND SAFEST PLACE TO INVEST  
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Ask us for samples and recommendations  
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Wanted quarry foreman for year around operation in central Illinois. Should understand hydraulic or sluice mining and blasting. Reply giving age, experience, salary expected and references. Address Box A-90, care of Rock Products, 309 W. Jackson Blvd., Chicago, Ill.

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POSITION WANTED—A PROVEN profit maker in the rock products industry in plants up to 100 employees desires position in either a mining, quarry or pit operation that has a Priority rating to insure continuous operation. Over 20 years experience and just over draft age. Now employed but available for interview. Address Box A-88, in care of Rock Products, 309 W. Jackson Blvd., Chicago, Ill.

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AS A FIGHTIN' SUB

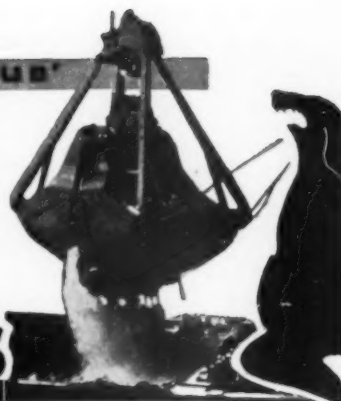
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BRANCHES: New York, Chicago, Philadelphia, Berkeley, Cal.

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## HIGH SCREEN COSTS

USE CLEVELAND "ALLOY" WIRE SCREENS

25 YEARS OF EXPERIENCE DOES COUNT

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Because their yards are equipped with Koehring Cranes, many scrap dealers have been able to handle easily the extra flow of steel scrap which has come to them through concerted scrap drives throughout the nation.

Powerful Koehring Cranes, with clamshell or orange peel buckets or heavy-duty magnets help speed the scrap to the balers and into the cars on its way to the steel mills.

The same features which have made Koehring Cranes so popular in other fields prove extremely useful in handling scrap. Some of these features are: accurate boom control...hoisting while swinging...positive load spotting...all welded construction.

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**HEAVY-DUTY CONSTRUCTION EQUIPMENT**

*A*gainst the sky . . . a tiny V winging toward the rising sun.

*Far below* . . . a small group of buildings, nestling in the Valley.

And deeper yet, in Earth's massive rock . . . a mine.

Partners in Victory. For the battle five miles up can be won in the mine one mile down, where coal or iron or copper or lead or silver . . . are blasted out of the earth.

It may be an open pit, where the pattern of smoke from a hundred holes tells the story of Primacord—the detonating fuse that is saving powder and man power—and promoting safety—wherever large blasting is done.



**Five miles up and one mile down**

It may be a mine deep in the rock: men working in the light of their lamps, drilling blast holes . . . charging . . . igniting the rounds of Ensign-Bickford Safety Fuse.

Is this war work? Yes! For *Victory begins underground*, and blasting has a new responsibility, a new purpose: to provide more and *more* and MORE of the coal and the metal with which a war is won. The Ensign-Bickford Co., Simsbury, Conn.

**Ensign-Bickford**

Safety Fuse  
Since 1836

Primacord-Bickford  
Detonating Fuse





**"Take care  
of yourself,  
Dad"**

Last year over 180 million man-days of productive time were lost through industrial accidents—many of them needless. Think how many tanks, ships, guns, planes those 180,000,000 man-days of work would have made! . . . Yes, dad—take care of yourself. Your soldier-son needs your factory production to win.

American Cable **TRU-LAY** **PREFORMED** **WIRE ROPE** is helping keep down accidents every day because it is a safer rope to use and handle. **TRU-LAY** **PREFORMED** resists kinking and snarling. It resists whipping; spools better. Worn, broken and chisel-sharp crown wires refuse to wicker out to jab workmen's hands. They remain in place, making **TRU-LAY** much safer to handle.

Use American Cable **TRU-LAY** **PREFORMED** for your next rope. Do everything possible to reduce lost-time accidents. America needs your full-time production.

**TRU-LAY**  
*Preformed*

**AMERICAN CABLE DIVISION**

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Tacoma

**AMERICAN CHAIN & CABLE COMPANY, Inc.**

BRIDGEPORT, CONNECTICUT



**ESSENTIAL PRODUCTS** . . . AMERICAN CABLE Wire Rope, TRU-STOP Emergency Brakes, TRU-LAY Control Cables, AMERICAN Chain, WEED Tire Chains, ACCO Malleable Iron Castings, CAMPBELL Cutting Machines, FORD Hoists and Trolleys, HAZARD Wire Rope, Yacht Rigging, Aircraft Control Cables, MANLEY Auto Service Equipment, OWEN Springs, PAGE Fence, Shaped Wire, Welding Wire, READING-PRATT & CADY Valves, READING Electric Steel Castings, WRIGHT Hoists, Cranes, Presses . . . *In Business for Your Safety*

## Savings on the Stockpile

Time-saving is especially important today, and there are many ways a  $\frac{3}{4}$ -yard 20-B can save time for you. Here are some of them: It's fast on the swing and the hoist . . . It's not tied down to tracks but can move to any part of your plant in a hurry . . . It's economical to run and will stand up to tough 3-shift operation . . . High-speed independent boom hoist is standard . . . It's quickly convertible to shovel or dragline and has plenty of stuff to handle stripping or go into the pit and load out rock in an emergency.



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